Appendix E
Data Quality Assessments

Recent Data Quality Assessment

Laboratory Analytical Data Validation Results

1 Summary

The soil sample analytical data reviewed for the 2001 Interim Corrective Actions at the Former DuPont Works Site in DuPont, Washington are acceptable for use based on a majority of acceptable quality control data. The data meet criteria specified in the 1992 Hart Crowser Management Plan.[1] The data may be used to assess analyte concentrations with the stated qualifications.

2 Introduction

This section presents a quality control (QC) review of data generated from collection and analysis of samples for the 2001 Interim Corrective Actions at the former DuPont Works Site in Dupont, Washington, from May 7, 2001 through September 19, 2001. Samples were submitted to Sound Analytical Services, Inc. (SAS) located in Tacoma, Washington for analysis. This review includes evaluation of the following:

- Laboratory report and reporting of required analyses
- Chain of custody and holding times
- Method blanks
- Surrogate recoveries
- Matrix spike / blank spike (MS / BS) recoveries
- Laboratory duplicates
- Field duplicates
- Reporting limits

The data quality review was conducted using guidance from the following documents:

- Remedial Investigation/Feasibility Study, Former Dupont Works Site Management Plan, Hart Crowser, January 1992. (Management Plan)
- Work Plan, Interim Source Removal Actions: Impacted Foundations and Narrow Gauge Railroad Beds at the Former DuPont Works Site, Dupont, Washington, Pioneer Technologies Corporation, West Shore Corporation, NW, December 6, 2000.
- National Functional Guidelines for Inorganic Data Review, EPA, February 1994.
- National Functional Guidelines for Organic Data Review, EPA, February 1994.

Criteria used to assess the data are found in Section 5 of the Management Plan. The analytical data were compared to criteria referenced in the Management Plan. The samples were analyzed for one or more of the following chemicals by the analytical methods shown:

• Metals (Arsenic, Lead and/or 23 metal target analyte list)	EPA 6000/7000 series
• Explosives (2,4-Dinitrotoluene, 2,6-Dinitrotoluene and 2,4,6-Trinitrotoluene)	EPA 8330
• Diesel-range and motor oil-range total petroleum hydrocarbons (TPH)	NWTPH-Dx

[1] Hart Crowser. January 17, 1992. Management Plan. Remedial Investigation/Feasibility Study, Former DuPont Works Site, DuPont, WA.

3 Sample Case

The sample data groups (SDGs) identified in Table . 1 were included in this data review.

Table 1 – Sample Data Groups Included in the Data Review

Sound Analytical Services Data Group Number	Date Sampled
97962 *	5/7/01
98654	6/6/01
98684	6/7/01
98762	6/12/01
98830	6/14/01
98881	6/18/01
98938	6/19/01
98976	6/20/01
99001	6/21/01
99002	6/21/01
99100	6/26/01
99114	6/27/01
99246	7/2/01
99277	7/3/01
99382	7/9/01
99452	7/11/01
99474	7/12/01
99583	7/17/01
99620	7/18/01
99660	7/19/01
99700	7/23/01
99729	7/24/01
99847	7/30/01
99881	7/31/01
99905	8/1/01

* This data review includes only a subset of the samples included with this SDG.

Sound Analytical Services Data Group Number	Date Sampled
99931	8/2/01
99996	8/6/01
100020	8/7/01
100052	8/8/01
100088	8/9/01
100144	8/13/01
100171	8/14/01
100198	8/15/01
100234	8/16/01
100280	8/20/01
100308	8/21/01
100330	8/22/01
100375	8/23/01
100443	8/27/01
100481	8/28/01
100529	8/29/01
100558	8/30/01
100606	9/4/01
100759	9/4/01
100645	9/5/01
100780	9/10/01–9/12/01
100804	9/13/01
100855	9/17/01
100856	9/17/01
100921	9/19/01

4 Laboratory Report and Reporting of Required Analyses

The laboratory reports included method blanks, surrogate recoveries (if appropriate), sample results, sample preparation logs, matrix spike results and matrix duplicate results. Blank spike data were reported for all organic analyses and were reported for metals only when matrix spike recovery data were outside of the control limits. Generally, the reports were adequate to evaluate the data quality given that blank spikes are not consistently reported. All sample analyses were reported as requested.

5 Chain of Custody and Holding Times

Samples were maintained under chain of custody until arrival at the laboratory. With the exception of the samples collected on September 10, 2001 (SAS # 100780), samples were submitted to the laboratory on the day of sample collection. All sample bottles were received in good condition. All samples were digested or extracted and analyzed within the method-required holding times.

6 Method and Field Blanks

Method blanks were used to determine if samples were contaminated through laboratory procedures or equipment. The laboratory method blanks were free of target analytes. The QC frequency requirement of one laboratory blank per analytical batch was met.

Field blanks (rinse blanks) were collected to assess potential cross-contamination in the field. Forty-five (45) field blanks were collected and analyzed for arsenic and lead. Arsenic was detected in 2 of the field blanks at concentrations of 0.02 mg/L and 0.01 mg/L. These field blanks are associated with the analytical groups 98830 and 100052, respectively. Lead was detected in 15 field blanks at concentrations ranging from 0.01 mg/L to 0.11 mg/L. These field blanks are associated with the analytical groups 98976, 99001, 99474, 99620, 99660, 99700, 99729, 99996, 100020, 100052, 100171, 100198, 100330, 100606 and 100645. Concentrations of arsenic and lead detected in the soil samples associated with these field blanks typically were reported with significantly higher concentrations of the metals (i.e. greater than 10X the concentration in the field blank). Data qualifiers were not assigned to associated soil analytical data based on method or field blank results.

7 Surrogate Recoveries

Laboratory performance on individual samples analyzed for explosives and TPH was assessed by reviewing the recoveries of system monitoring compounds (surrogates). Surrogate recoveries for samples analyzed for explosives and TPH were acceptable and data qualifiers were not assigned.

8 Matrix Spikes/Blank Spikes

Matrix spike (MS) analyses were used to assess matrix effects with respect to the analytical data. The QC frequency requirement of one MS per analytical batch or one MS per 20 samples was met. In some cases, the MS was performed on samples unrelated to this site. Thirty (30) SDGs contained MS analyses on samples unrelated to this site. These SDGs are listed in the Laboratory Duplicates section of this report. Data qualifiers were not assigned based on results from MS analyses performed on samples unrelated to this site. Blank spike (BS) analyses were used to assess the overall performance of the analytical system when matrix spike recoveries were not acceptable.

Arsenic and Lead by EPA 6010

The MS results were compared to the method control limits of 75 to 125%. The lead recovery (376%) and the arsenic recovery (51%) for the MS performed on sample 01-OS02-SS[LR-68-600E-TRANSECT]-C1-000 (SDG 100529) were outside of the control limits. Per data validation guidelines, when the concentration of the analyte in the parent sample is greater than 4X the spike level, data are not qualified based on the MS recovery. Lead results were not qualified due to the MS recovery in sample 01-OS02-SS[LR-68-600E-TRANSECT]-C1-000 based on the 4X rule. Results for arsenic in the samples in the same analytical batch as 01-OS02-SS[LR-68-600E-TRANSECT]-C1-000 (SDG 100529) were qualified as estimated and flagged "J" or "UJ" based on MS results.

The recovery of lead (44%) in the MS performed on sample 02-N01-SS[NGRR-145-2]C2-025 (SDG 100558) was below the control limits due to sample matrix interference. Results for lead for samples in the same analytical batch as sample 02-N01-SS[NGRR-145-2]C2-025 (SDG100558) were qualified as estimated and flagged "J" based on the MS results. The results for arsenic in SDG 100558 were not qualified.

Based on review of the sample preparation log sheets, blank spikes were prepared at the appropriate frequency although the results were reported only when MS recoveries were outside of control limits. The blank spike recoveries provided were all within the control limits of 80 to 120%. Data provided included sets of blank spike/blank spike duplicates for lead associated with samples from SDGs 100529 and 100558 and arsenic associated with samples from SDG 100529. Blank spike/blank spike duplicate data were also provided for chromium and nickel associated with samples from SDG 99002 and lead associated with samples from SDG 100375, where the MS was performed on a non-project sample. Data qualifiers were not assigned to associated samples based on blank spike/blank spike duplicate results.

Explosives by EPA 8330

The recovery of 2,4,6-trinitrotoluene (2,4,6-TNT) in the MS (1,900 %) and the recoveries of 2,4-dinitrotoluene (2,4-DNT, 465%), 2,6-dinitrotoluene (2,6-DNT, 132%) and 2,4,6-TNT (200,000%) in the MSD performed on sample 03-IN01-SS[10-VS-5]D2-7.0 (SDG 99905) were outside of the laboratory control limits of 69–110% for 2,4,6-TNT, 78-105% for 2,4-DNT, and 68-108% for 2,6-DNT. The relative percent differences (RPDs) for 2,4,6-TNT (200%), 2,4-DNT (130%) and 2,6-DNT (21%) were greater than the RPD control limits of 9%, 13%, and 10% for 2,4,6-TNT, 2,4-DNT and 2,6-DNT, respectively. Recoveries of explosives in the blank spike/blank spike duplicate were acceptable. Results for 2,4,6-TNT, 2,4-DNT and 2,6-TNT for sample 03-IN01-SS[10-VS-5]D2-7.0 were qualified as estimated and assigned "J" or "UJ" flags based on MS/MSD results.

Diesel-Range and Motor Oil-Range TPH by NWTPH-Dx

A MS/MSD was not performed on any of the samples submitted for diesel-range and motor oil-range TPH analysis. Data were assessed based on the BS/BSD results that were acceptable.

9 Laboratory Duplicates

Laboratory duplicate results were used to assess the precision of laboratory measurements. The laboratory duplicate results were compared to the project control limit for relative percent difference (RPD) of 35% when sample results were greater than or equal to five times the reporting limit. A control limit of plus or minus the reporting limit was used for evaluation of duplicate samples where one or both of the results are less than five times the reporting limit. The QC frequency requirement of one duplicate per analytical batch or one duplicate per 20 samples was met. In some cases, the duplicate was performed on samples unrelated to this site. Thirty (30) SDGs include samples or subsets of samples that are associated with duplicate analyses performed on samples unrelated to this site (summarized below). Data qualifiers were not assigned to sample data based on duplicate analyses of non-project samples.

SDGs with MS and Laboratory Duplicate Analysis performed on non-project samples

98654*	99100*	99474	100052	100308	100558
98684	99114*	99905	100088	100330	100606
98938*	99246*	99660*	100171	100375	100645*
99001	99382*	99931	100198	100481*	100780*
99002	99452*	99996	100280*	100529	100804*

* Associated with water samples only

Arsenic and Lead by EPA 6010

A total of sixty-two samples were qualified as estimated based on the results of laboratory duplicate analyses. All qualified results for metals analysis are summarized in Table A-2. Of the samples qualified based on laboratory duplicates, 20 samples were qualified due to an RPD that is greater than 35% and 42 sample results were qualified due to a difference of greater than the reporting limit between a sample and

its duplicate. Qualified data were assigned "J" flags if the sample result was reported as detected and "UJ" flags if reported as not detected.

Explosives by EPA 8330

Second column confirmation for detected compounds was performed on samples analyzed for explosives by EPA Method 8330. The RPDs of the results were evaluated by the laboratory and found to be greater than 40% for 2,4,6-TNT in samples 03-IN01-SS[10-VS-8]D2-5.0, 03-IN01-SS[10-VS-9]D2-5.0 and 03-IN01-SS[10-VS-10]D3-5.0, and for 2,4-DNT in sample 03-IN01-SS[10-VS-5]D2-7.0 (SDG 99905). Sample results were qualified as estimated and flagged with a "J" for 2,4,6-TNT in samples 03-IN01-SS[10-VS-8]D2-5.0, 03-IN01-SS[10-VS-9]D2-5.0 and 03-IN01-SS[10-VS-10]D3-5.0 and for 2,4-DNT in sample 03-IN01-SS[10-VS-5]D2-7.0.

10 Field Duplicates

Field duplicate samples were used to assess sampling precision and representativeness. The QC frequency requirement of one field duplicate for 5 percent of the total samples collected was met for metals and explosives analyses. Forty-nine (49) sets of field duplicate samples for metals analysis were collected and one set of duplicate samples were collected for explosives. A field duplicate was not collected for diesel-range and motor oil-range TPH analysis. Table A-3 presents the RPDs of detected compounds that were calculated for the duplicate pairs of soil samples analyzed for metals and explosives.

11 Reporting Limits

Reporting limits were reviewed to ensure that results reported meet project goals. The reporting limits are acceptable for the project needs. The data are summarized in Tables A-4 through A-12:

Analytical Results for Sampling, May - September 2001

Table A-4	Foundations
Table A-5	NGRR
Table A-6	Industrial
Table A-7	Sequalitchew Creek
Table A-8	Hot Spot
Table A-9	Historical Areas
Table A-10	Core Drilling
Table A-11	Topsoil Laydown Areas
Table A-12	Production Well
Table A-13	Hoffman Reservoir

Arsenic and Lead by EPA 6010

The samples analyzed on August 23, 2001 were reported with elevated PQLs. This affects the samples collected on August 20, 2001 (SDG 100280) and a subset of samples collected August 21, 2001 (SDG 100308). The typical PQLs for lead and arsenic analyses performed on soil samples for this project were approximately 2 mg/kg for both metals. Samples analyzed on August 23, 2001 were reported with PQLs of approximately 20 mg/kg for lead and 40 mg/kg for arsenic. The soil screening levels for lead and arsenic (118 mg/kg and 64 mg/kg, respectively) are greater than the elevated PQLs reported for the August 23 analyses, therefore the elevated PQLs do not affect the use of these data for project objectives.

Explosives by EPA 8330

The result for 2,4-DNT reported by the laboratory for sample 18-TR-18N,S-1 (0.023 mg/kg) was below the reported PQL for 2,4-DNT (0.045 mg/kg). The laboratory assigned a "J" flag to the sample result, as they typically do when reporting below the PQL. The Corps of Engineers requires SAS to report all confirmed detections of explosives even if compounds are detected below the PQL.

Diesel-Range and Motor Oil-Range TPH by NWTPH-Dx

The result for diesel-range TPH reported by the laboratory for sample WEY-GEO-4 (18 mg/kg) was below the reported PQL for diesel-range TPH (30 mg/kg). The laboratory assigned a "J" flag to the sample result, as they typically do when reporting below the PQL.

Table A-2

Summary of Qualified Results for Lead and Arsenic
Interim Source Removal Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date	As (mg/kg)	Flag	Pb (mg/kg)	Flag	Reason
01-F03-ER[F-172]C4-000	20-Jun-01	0.01	U	0.021	J	Dup (1)
01-N01-ER[NGRR-61]C4-000	12-Jul-01	0.01	U	0.03	J	Dup (2)
01-F34-SS[F-170]C2-005	17-Jul-01	3.1		5.5	J	Dup (1)
01-F34-SS[F-171]C2-005	17-Jul-01	3		29	J	Dup (1)
01-N01-SS[NGRR-62]C2-005	17-Jul-01	21		6	J	Dup (1)
01-N01-SS[NGRR-63]C2-005	17-Jul-01	7.6		3.1	J	Dup (1)
01-N01-SS[NGRR-64]C2-005	17-Jul-01	2.8		1.8	UJ	Dup (1)
01-N01-SS[NGRR-65]C2-005	17-Jul-01	3.8		2.1	UJ	Dup (1)
01-N01-SS[NGRR-66]C2-005	17-Jul-01	12		5.3	J	Dup (1)
01-N01-SS[NGRR-67]C2-005	17-Jul-01	3.9		7.3	J	Dup (1)
01-N01-SS[NGRR-69]C2-005	17-Jul-01	210		18	J	Dup (1)
01-N01-SS[NGRR-70]C2-005	17-Jul-01	6.5		2.8	J	Dup (1)
01-N01-SS[NGRR-71]C2-005	17-Jul-01	9.9		2	UJ	Dup (1)
01-N01-SS[NGRR-72]C2-005	17-Jul-01	11		2.6	J	Dup (1)
01-N01-SS[NGRR-73]C2-005	17-Jul-01	3.7		1.8	UJ	Dup (1)
01-N01-ER[NGRR-86]C4-000	18-Jul-01	0.01	U	0.032	J	Dup (1)
01-N01-ER[NGRR-119]C4-000	23-Jul-01	0.01	U	0.011	J	Dup (1)
01-N01-ER[NGRR-137]C4-000	24-Jul-01	0.01	U	0.011	J	Dup (1)
01-N01-ER[NGRR-257]C4-000	13-Aug-01	0.01	U	0.01	UJ	Dup (1)
01-F35-ER[F-258]C4-000	14-Aug-01	0.01	U	0.017	J	Dup (1)
01-N01-ER[NGRR-296]C4-000	15-Aug-01	0.01	U	0.013	J	Dup (1)
01-N01-ER[NGRR-311]C4-000	16-Aug-01	0.01	U	0.01	UJ	Dup (1)
01-N01-SS[NGRR-342]C2-005	20-Aug-01	42	U	46	J	Dup (1)
01-N01-SS[NGRR-343]C3-005	20-Aug-01	42	U	21	UJ	Dup (1)
01-N01-SS[NGRR-344]C2-005	20-Aug-01	43	U	21	UJ	Dup (1)
01-N01-SS[NGRR-345]C2-005	20-Aug-01	39	U	20	UJ	Dup (1)
01-N01-SS[NGRR-346]C2-005	20-Aug-01	41	U	21	UJ	Dup (1)
01-N01-SS[NGRR-347]C2-005	20-Aug-01	38	U	19	UJ	Dup (1)
01-N01-SS[NGRR-348]C2-005	20-Aug-01	41	U	20	UJ	Dup (1)
01-N01-SS[NGRR-349]C2-005	20-Aug-01	38	U	19	UJ	Dup (1)
01-N01-SS[NGRR-350]C2-005	20-Aug-01	40	U	20	UJ	Dup (1)
01-N01-SS[NGRR-351]C2-005	20-Aug-01	42	U	21	UJ	Dup (1)
01-N01-SS[NGRR-352]C2-005	21-Aug-01	40	U	20	UJ	Dup (1)
01-N01-SS[NGRR-353]C3-005	21-Aug-01	43	U	21	UJ	Dup (1)
01-N01-SS[NGRR-354]C2-005	21-Aug-01	43	U	21	UJ	Dup (1)
01-N01-SS[NGRR-355]C2-005	21-Aug-01	45	U	22	UJ	Dup (1)
01-N01-SS[NGRR-356]C2-005	21-Aug-01	42	U	21	UJ	Dup (1)
01-N01-SS[NGRR-357]C2-005	21-Aug-01	40	U	20	UJ	Dup (1)
01-N01-SS[NGRR-358]C2-005	21-Aug-01	37	U	18	UJ	Dup (1)
01-N01-SS[NGRR-359]C2-005	21-Aug-01	43	U	22	UJ	Dup (1)
01-N01-SS[NGRR-360]C2-005	21-Aug-01	44	U	22	UJ	Dup (1)
01-N01-SS[NGRR-361]C2-005	21-Aug-01	40	U	20	UJ	Dup (1)
01-OS02-SS[LR-68-600E-TRANSECT]-C1-000	29-Aug-01	20	J	1700		MS
01-OS02-SS[LR-68-300W-TRANSECT]-C1-000	29-Aug-01	20	J	23		MS
01-OS02-SS-[LR-68-1500W-TRANSECT]-C1-000	29-Aug-01	10	J	22		MS
01-OS02-SS-[LR-68-3600W-TRANSECT]-C1-000	29-Aug-01	27	J	38		MS
02-N01-SS[NGRR-27-2]C2-025	29-Aug-01	31	J	14		MS
02-N01-SS[NGRR-29-2]C2-025	29-Aug-01	17	J	16		MS
02-N01-SS[NGRR-30-2]C2-025	29-Aug-01	6	J	4.8		MS
02-F23-SS[F-161-2]C2-030	29-Aug-01	6.7	J	180		MS
02-F23-SS[F-162-2]C2-030	29-Aug-01	12	J	31		MS

Table A-2

Summary of Qualified Results for Lead and Arsenic
Interim Source Removal Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date	As (mg/kg)	Flag	Pb (mg/kg)	Flag	Reason
02-F11-SS[F-244-2]C2-030	29-Aug-01	16	J	720		MS
02-F11-SS[F-245-2]C2-030	29-Aug-01	11	J	2100		MS
02-F11-SS[F-246-2]C2-030	29-Aug-01	6.4	J	38		MS
02-F11-SS[F-248-2]C2-030	29-Aug-01	4.8	J	96		MS
02-F11-SS[F-249-2]C2-030	29-Aug-01	9.2	J	4900		MS
02-F11-SS[F-250-2]C3-030	29-Aug-01	10	J	710		MS
02-F11-SS[F-251-2]C2-030	29-Aug-01	8.5	J	150		MS
02-F11-SS[F-252-2]C2-030	29-Aug-01	5.4	J	140		MS
02-F11-SS[F-253-2]C2-030	29-Aug-01	24	J	65		MS
02-F11-SS[F-254-2]C2-030	29-Aug-01	20	J	280		MS
02-F11-SS[F-255-2]C2-030	29-Aug-01	11	J	47		MS
02-N01-SS[NGRR-07-2]C2-025	30-Aug-01	4.6		22	J	Dup (2), MS
02-N01-SS[NGRR-08-2]C3-025	30-Aug-01	4.5		21	J	Dup (2), MS
02-N01-SS[NGRR-125-2]C2-025	30-Aug-01	4.9		15	J	Dup (2), MS
02-N01-SS[NGRR-126-2]C3-025	30-Aug-01	5.7		14	J	Dup (2), MS
02-N01-SS[NGRR-132-2]C2-025	30-Aug-01	3.9		9.9	J	Dup (2), MS
02-N01-SS[NGRR-145-2]C2-025	30-Aug-01	7.2		250	J	Dup (2), MS
02-N01-SS[NGRR-179-2]C2-025	30-Aug-01	52		140	J	Dup (2), MS
02-N01-SS[NGRR-279-2]C2-025	30-Aug-01	14		34	J	Dup (2), MS
02-N01-SS[NGRR-280-2]C3-025	30-Aug-01	11		19	J	Dup (2), MS
02-N01-SS[NGRR-281-2]C2-025	30-Aug-01	35		40	J	Dup (2), MS
02-N01-SS[NGRR-282-2]C2-025	30-Aug-01	7.3		29	J	Dup (2), MS
02-N01-SS[NGRR-301-2]C2-025	30-Aug-01	6		14	J	Dup (2), MS
02-N01-SS[NGRR-302-2]C2-025	30-Aug-01	5.3		8.6	J	Dup (2), MS
02-F30-SS[F-227-2]C2-030	30-Aug-01	5.6		35	J	Dup (2), MS
02-F31-SS[F-233-2]C2-030	30-Aug-01	5.7		54	J	Dup (2), MS
02-F08-SS[F-08-2]C2-030	30-Aug-01	2.6		90	J	Dup (2), MS
02-F15-SS[F-128-2]C2-030	30-Aug-01	6		200	J	Dup (2), MS
02-F15-SS[F-133-2]C2-030	30-Aug-01	4.1		55	J	Dup (2), MS
02-F38-SS[F-259-2]C2-030	30-Aug-01	5.2		57	J	Dup (2), MS
01-E18-ER[F-329]C4-000	19-Sep-01	0.01	U	0.01	UJ	Dup (1)

Equipment (field) blank sample. Results given as mg/L.

U The analyte was analyzed for, but was not detected above the reporting limit shown.
J Estimated Value, qualifier assigned during data review
UJ Analyte was analyzed for, but was not detected above the reporting limit shown. The reporting limit is estimated.
Dup (1) Both the sample and duplicate results were less than 5X the PQL. Data were evaluated by comparing the difference between values and qualifying data that were outside of +/- the reporting limit.
Dup (2) Both the sample and duplicate results were greater than or equal to 5X the PQL. Data were evaluated based on their relative percent difference (RPD).
MS - Data was qualified based on the matrix or matrix spike duplicate.

Table A-3

Summary of Duplicate Samples

Interim Source Removal Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Metals Analysis					
Sample ID	**Date**	**As Result (mg/kg)**	**RPD (As) %**	**Pb Result (mg/kg)**	**RPD (Pb) %**
01-F08-SS[F-01] C2-005	6-Jun-01	4.1	10.3	3.5	0.0
01-F08-SS[F-02] C3-005		3.7		3.5	
01-F08-SS[F-17] C2-005	6-Jun-01	2.9	12.9	2.8	15.4
01-F08-SS[F-18] C3-005		3.3		2.4	
01-N01-SS[NGRR-07]C2-005	7-Jun-01	130	7.4	16	31.6
01-N01-SS[NGRR-08]C3-005		140		22	
01-F01-SS[F-48]C2-005	14-Jun-01	4.4	14.7	14	44.4
01-F01-SS[F-49]C3-005		5.1		22	
01-F01-SS[F-83]C2-005	18-Jun-01	4.3	17.0	120	0.0
01-F01-SS[F-84]C3-005		5.1		120	
01-F03-SS[F-102]C2-005	20-Jun-01	8.3	42.3	30	55.4
01-F03-SS[F-103]C3-005		5.4		53	
01-F04-SS[F-116]C2-005	20-Jun-01	8.7	21.7	16	0.0
01-F04-SS[F-117]C3-005		7		16	
01-N01-SS[NGRR-14]C2-005	26-Jun-01	4.6	4.4	6.9	1.4
01-N01-SS[NGRR-15]C3-005		4.4		7	
01-N01-SS[NGRR-19]C2-005	2-Jul-01	3.8	51.0	3.2	9.8
01-N01-SS[NGRR-20]C3-005		6.4		2.9	
01-H404-SS[11]D1-005	3-Jul-01	6.1	1.6	33	12.9
01-H404-SS[12]D2-005		6.2		29	
01-N01-SS[NGRR-36]C2-005	11-Jul-01	6	0.0	25	4.1
01-N01-SS[NGRR-37]C3-005		6		24	
01-N01-SS[NGRR-54]C2-005	12-Jul-01	6.2	12.0	7.3	19.5
01-N01-SS[NGRR-55]C3-005		5.5		6	
01-N01-SS[NGRR-74]C2-005	18-Jul-01	7.5	34.4	4.1	27.8
01-N01-SS[NGRR-75]C3-005		5.3		3.1	
01-N01-SS[NGRR-95]C2-005	19-Jul-01	3.7	42.6	5	5.8
01-N01-SS[NGRR-96]C3-005		2.4		5.3	
01-N01-SS[NGRR-103]C2-005	23-Jul-01	6.1	9.4	9.8	26.6
01-N01-SS[NGRR-104]C3-005		6.7		7.5	
01-N01-SS[NGRR-125]C2-005	24-Jul-01	97	12.0	23	4.4
01-N01-SS[NGRR-126]C3-005		86		22	
01-F37-SS[F-189]C2-005	30-Jul-01	4.9	17.8	3.5	37.3
01-F37-SS[F-190]C3-005		4.1		2.4	
01-N01-SS[NGRR-153]C2-005	31-Jul-01	3.5	0.0	2.3	4.4
01-N01-SS[NGRR-154]C3-005		3.5		2.2	
01-N01-SS[NGRR-164]C2-005	2-Aug-01	11	9.5	63	31.2
01-N01-SS[NGRR-165]C3-005		10		46	
01-N01-SS[NGRR-187]C2-005	6-Aug-01	35	13.3	11	8.7
01-N01-SS[NGRR-188]C3-005		40		12	
01-N01-SS[NGRR-193]C2-005	7-Aug-01	11	0.0	57	6.8
01-N01-SS[NGRR-194]C3-005		11		61	
01-N01-SS[NGRR-223]C2-005	8-Aug-01	6.6	9.5	5.6	6.9
01-N01-SS[NGRR-224]C3-005		6		6	
01-N01-SS[NGRR-235]C2-005	9-Aug-01	6.5	0.0	7.4	11.4
01-N01-SS[NGRR-236]C3-005		6.5		6.6	
01-N01-SS[NGRR-245]C2-005	13-Aug-01	8.6	7.8	10	10.5
01-N01-SS[NGRR-246]C3-005		9.3		9	
01-N01-SS[NGRR-261]C2-005	13-Aug-01	6.7	9.9	5.6	11.8
01-N01-SS[NGRR-262]C3-005		7.4		6.3	
01-N01-SS[NGRR-279]C2-005	14-Aug-01	140	19.4	79	20.5
01-N01-SS[NGRR-280]C3-005		170		97	
01-F11-SS[F-249]C2-005	14-Aug-01	20	4.9	2500	0.0
01-F11-SS[F-250]C3-005		21		2500	
01-N01-SS[NGRR-283]C2-005	15-Aug-01	12	8.7	20	10.5
01-N01-SS[NGRR-284]C3-005		11		18	
01-N01-SS[NGRR-301]C2-005	16-Aug-01	81	20.0	37	21.7
		99		46	

Table A-3

Summary of Duplicate Samples
Interim Source Removal Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Metals Analysis					
Sample ID	**Date**	**As Result (mg/kg)**	**RPD (As) %**	**Pb Result (mg/kg)**	**RPD (Pb) %**
01-N01-SS[NGRR-321]C2-005 01-N01-SS[NGRR-322]C3-005	20-Aug-01	42 U 41 U	NC	21 U 21 U	NC
01-N01-SS[NGRR-342]C2-005 01-N01-SS[NGRR-343]C3-005	20-Aug-01	42 U 42 U	NC	46 J 21 U	NC
01-N01-SS[NGRR-352]C2-005 01-N01-SS[NGRR-353]C3-005	21-Aug-01	40 U 43 U	NC	20 UJ 21 UJ	NC
01-F09-SS[F-260]C2-005 01-F09-SS[F-261]C3-005	22-Aug-01	4.4 4.7	6.6	5.2 3.5	39.1
01-N01-SS[NGRR-383]C2-005 01-N01-SS[NGRR-384]C3-005	23-Aug-01	5.2 4.9	5.9	5.5 5.2	5.6
01-N01-SS[NGRR-411]C2-005 01-N01-SS[NGRR-412]C3-005	27-Aug-01	9.7 8.9	8.6	8.8 7.4	17.3
01-F33-SS[F-273]C2-005 01-F33-SS[F-274]C3-005	28-Aug-01	15 14	6.9	98 62	45.0
02-F02-SS[F-83-2]C2-030 02-F02-SS[F-84-2]C3-030	28-Aug-01	4.8 3.6	28.6	89 76	15.8
02-F11-SS[F-249-2]C2-030 02-F11-SS[F-250-2]C3-030	29-Aug-01	9.2 J 10 J	8.3	4900 710	149.4
02-N01-SS[NGRR-07-2]C2-025 02-N01-SS[NGRR-08-2]C3-025	30-Aug-01	4.6 4.5	2.2	22 J 21 J	4.7
02-N01-SS[NGRR-279-2]C2-025 02-N01-SS[NGRR-280-2]C3-025	30-Aug-01	14 11	24.0	34 J 19 J	56.6
02-N01-SS[NGRR-125-2]C2-025 02-N01-SS[NGRR-126-2]C3-025	30-Aug-01	4.9 5.7	15.1	15 J 14 J	6.9
02-N01-SS[NGRR-301-2]C2-025 02-N01-SS[NGRR-302-2]C3-025	30-Aug-01	6 5.3	12.4	14 J 8.6 J	47.8
01-F20-SS[F-284]-C2-005 01-F20-SS[F-285]-C3-005	4-Sep-01	4.9 6.5	28.1	5.8 5.8	0.0
01-F20-SS-[F-294]-C2-005 01-F20-SS-[F-295]-C3-005	5-Sep-01	6.8 7.5	9.8	25 32	24.6
03-F02-SS-[F-76-3]-C2-050 03-F02-FD-[F-84-3]-C3-050	13-Sep-01	4.7 7.6	47.2	19 30	44.9
03-F02-SS-[F-77-3]-C2-050 03-F02-FD-[F-49-3]-C3-050	13-Sep-01	10 75	152.9	20 12	50.0
04-F02-SS-[F-89-4]-C2-060 01-F02-FD-[F-326]-C3-000	19-Sep-01	7.6 6.5	15.6	86 87	1.2
04-F02-SS-[F-90-4]-C2-060 01-F02-FD-[F-327]-C3-000	19-Sep-01	6.7 7.1	5.8	270 440	47.9
02-F18-SS-[F-319-2]-C2-030 01-F18-FD-[F-328]-C3-030	19-Sep-01	4.2 3.8	10.0	2.9 3.6	21.5

Explosives Analysis			
Sample ID	**Date**	**2,4,6-Trinitrotoluene Result (mg/kg)**	**RPD (Pb) %**
03-IN01-SS[10-VS-9]D2-5.0 03-IN01-SS[10-VS-10]D3-5.0	1-Aug-01	0.12 J 0.14 J	15.4

NC = Not Calculable

Table A-4

Soil Analytical Results for Lead and Arsenic
Foundations Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-F08-SS[F-01] C2-005	6-Jun-01	4.1		3.5		01-F08-SS[F-02] C3-005
01-F08-SS[F-02] C3-005	6-Jun-01	3.7		3.5		
01-F08-SS[F-03] C2-005	6-Jun-01	3.3		3.9		
01-F08-SS[F-04] C2-005	6-Jun-01	2.5		2.2		
01-F08-SS[F-05] C2-005	6-Jun-01	3.1		2.7		
01-F08-SS[F-06] C2-005	6-Jun-01	2.6		3.9		
01-F08-SS[F-07] C2-005	6-Jun-01	5		75		
01-F08-SS[F-08] C2-005	6-Jun-01	2	U	190		
01-F08-SS[F-09] C2-005	6-Jun-01	3.5		3.3		
01-F08-SS[F-10] C2-005	6-Jun-01	3.9		4.4		
01-F08-SS[F-11] C2-005	6-Jun-01	3.8		2.4		
01-F08-SS[F-12] C2-005	6-Jun-01	2.6		4.5		
01-F08-SS[F-13] C2-005	6-Jun-01	4.6		14		
01-F08-SS[F-14] C2-005	6-Jun-01	3.6		13		
01-F08-SS[F-15] C2-005	6-Jun-01	3.2		7		
01-F08-SS[F-16] C2-005	6-Jun-01	3.1		3.5		
01-F08-SS[F-17] C2-005	6-Jun-01	2.9		2.8		01-F08-SS[F-18] C3-005
01-F08-SS[F-18] C3-005	6-Jun-01	3.3		2.4		
01-F08-ER[F-19] C4-000	6-Jun-01	0.01	U	0.01	U	
01-F07-SS[F-20]C2-005	7-Jun-01	2.8		2.3		
01-F07-SS[F-21]C2-005	7-Jun-01	2.7		2.5		
01-F07-SS[F-22]C2-005	7-Jun-01	2.5		2.3		
01-F07-SS[F-23]C2-005	7-Jun-01	2	U	2.1		
01-F07-SS[F-24]C2-005	7-Jun-01	3.4		2.3		
01-F06-SS[F-25]C2-005	7-Jun-01	2.5		2.3		
01-F06-SS[F-26]C2-005	7-Jun-01	3.8		8.2		
01-F06-SS[F-27]C2-005	7-Jun-01	4.1		3		
01-F06-SS[F-28]C2-005	7-Jun-01	2.4		24		
01-F01-SS[F-29]C2-005	12-Jun-01	5.6		8.5		
01-F01-SS[F-30]C2-005	12-Jun-01	4.1		28		
01-F01-SS[F-31]C2-005	12-Jun-01	12		37		
01-F01-SS[F-32]C2-005	12-Jun-01	13		70		
01-F01-SS[F-33]C2-005	12-Jun-01	3.5		3.6		
01-F01-SS[F-34]C2-005	12-Jun-01	4.2		15		
01-F01-SS[F-35]C2-005	12-Jun-01	7		18		
01-F01-SS[F-36]C2-005	12-Jun-01	5.4		41		
01-F01-SS[F-37]C2-005	12-Jun-01	13		43		
01-F01-SS[F-38]C2-005	12-Jun-01	13		93		
01-F01-SS[F-39]C2-005	12-Jun-01	12		19		
01-F01-SS[F-40]C2-005	12-Jun-01	5.5		40		
01-F01-ER[F41]C4-000	12-Jun-01	0.01	U	0.01	U	
01-F01-SS[F-42]C2-005	12-Jun-01	9.8		150		
01-F01-SS[F-43]C2-005	12-Jun-01	7.7		53		
01-F01-SS[F-44]C2-005	12-Jun-01	7.9		41		
01-F01-SS[F-45]C2-005	12-Jun-01	9.1		67		
01-F01-SS[F-46]C2-005	14-Jun-01	7.8		37		
01-F01-SS[F-47]C2-005	14-Jun-01	3.2		120		
01-F01-SS[F-48]C2-005	14-Jun-01	4.4		14		01-F01-SS[F-49]C3-005
01-F01-SS[F-49]C3-005	14-Jun-01	5.1		22		
01-F01-SS[F-50]C2-005	14-Jun-01	3		2.4		
01-F01-SS[F-51]C2-005	14-Jun-01	6.3		9.3		
01-F01-SS[F-52]C2-005	14-Jun-01	9.8		23		
01-F01-SS[F-53]C2-005	14-Jun-01	7.4		26		
01-F01-SS[F-54]C2-005	14-Jun-01	3.6		4.9		
01-F01-SS[F-55]C2-005	14-Jun-01	4.2		4.7		
01-F01-SS[F-56]C2-005	14-Jun-01	6.5		29		
01-F01-SS[F-57]C2-005	14-Jun-01	6.8		6.2		
01-F01-SS[F-58]C2-005	14-Jun-01	2.6		2.7		

Table A-4

Soil Analytical Results for Lead and Arsenic Foundations Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-F01-SS[F-59]C2-005	14-Jun-01	5.3		2.4	U	
01-F01-SS[F-60]C2-005	14-Jun-01	4.4		2.2	U	

Table A-4

Soil Analytical Results for Lead and Arsenic Foundations Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-F01-SS[F-61]C2-005	14-Jun-01	3.9		2.3	U	
01-F01-SS[F-62]C2-005	14-Jun-01	3.8		2.4		
01-F01-SS[F-63]C2-005	14-Jun-01	4.7		88		
01-F01-SS[F-64]C2-005	14-Jun-01	11		430		
01-F01-ER[F-65]C4-000	14-Jun-01	0.02		0.01	U	
01-F01-SS[F-66]C2-005	18-Jun-01	6.3		59		
01-F01-SS[F-67]C2-005	18-Jun-01	5.4		340		
01-F01-SS[F-68]C2-005	18-Jun-01	4.1		10		
01-F01-SS[F-69]C2-005	18-Jun-01	4.5		4.8		
01-F01-SS[F-70]C2-005	18-Jun-01	2.9		49		
01-F01-ER[F-71]C4-000	18-Jun-01	0.01	U	0.01	U	
01-F02-SS[F-72]C2-005	18-Jun-01	4.7		170		
01-F02-SS[F-73]C2-005	18-Jun-01	3.7		10		
01-F02-SS[F-74]C2-005	18-Jun-01	7.6		10		
01-F02-SS[F-75]C2-005	18-Jun-01	3.7		5.9		
01-F02-SS[F-76]C2-005	18-Jun-01	5.5		140		
01-F02-SS[F-77]C2-005	18-Jun-01	5.9		130		
01-F02-SS[F-78]C2-005	18-Jun-01	9		320		
01-F02-SS[F-79]C2-005	18-Jun-01	7.5		780		
01-F02-SS[F-80]C2-005	18-Jun-01	4.2		410		
01-F02-SS[F-81]C2-005	18-Jun-01	7.4		210		
01-F02-SS[F-82]C2-005	18-Jun-01	3.5		3		
01-F02-SS[F-83]C2-005	18-Jun-01	4.3		120		01-F01-SS[F-84]C3-005
01-F02-SS[F-84]C3-005	18-Jun-01	5.1		120		
01-F02-SS[F-85]C2-005	19-Jun-01	8.3		270		
01-F02-SS[F-86]C2-005	19-Jun-01	8.5		100		
01-F02-SS[F-87]C2-005	19-Jun-01	5		6.8		
01-F02-SS[F-88]C2-005	19-Jun-01	9.3		500		
01-F02-SS[F-89]C2-005	19-Jun-01	4.7		250		
01-F02-SS[F-90]C2-005	19-Jun-01	3.2		670		
01-F02-SS[F-91]C2-005	19-Jun-01	8.6		350		
01-F02-SS[F-92]C2-005	19-Jun-01	5.1		400		
01-F02-ER[F93]C4-000	19-Jun-01	0.01	U	0.01	U	
01-F03-SS[F-94]C2-005	19-Jun-01	3.9		7.7		
01-F03-SS[F-95]C2-005	19-Jun-01	10		89		
01-F03-SS[F-96]C2-005	19-Jun-01	2.8		5		
01-F03-SS[F-97]C2-005	19-Jun-01	5.5		83		
01-F03-SS[F-98]C2-005	19-Jun-01	5.2		3.5		
01-F03-SS[F-99]C2-005	19-Jun-01	4.9		3.2		
01-F03-SS[F-100]C2-005	19-Jun-01	7.8		23		
01-F03-SS[F-101]C2-005	19-Jun-01	5.3		150		
01-F03-SS[F-102]C2-005	20-Jun-01	8.3		30		01-F03-SS[F-103]C3-005
01-F03-SS[F-103]C3-005	20-Jun-01	5.4		53		
01-F03-SS[F-104]C2-005	20-Jun-01	5.8		30		
01-F03-SS[F-105]C2-005	20-Jun-01	8.5		95		
01-F03-SS[F-106]C2-005	20-Jun-01	2.9		38		
01-F03-SS[F-107]C2-005	20-Jun-01	14		9.9		
01-F03-SS[F-108]C2-005	20-Jun-01	9.7		18		
01-F03-SS[F-109]C2-005	20-Jun-01	7.3		22		
01-F03-SS[F-110]C2-005	20-Jun-01	7.1		75		
01-F03-SS[F-111]C2-005	20-Jun-01	11		4.8		
01-F03-SS[F-112]C2-005	20-Jun-01	8.2		82		
01-F03-SS[F-113]C2-005	20-Jun-01	12		26		
01-F03-ER[F-114]C4-000	20-Jun-01	0.01	U	0.041	J	
01-F04-SS[F-115]C2-005	20-Jun-01	7.1		5.2		
01-F04-SS[F-116]C2-005	20-Jun-01	8.7		16		01-F04-SS[F-117]C3-005
01-F04-SS[F-117]C3-005	20-Jun-01	7		16		
01-F04-SS[F-118]C2-005	20-Jun-01	100		10		

Table A-4

Soil Analytical Results for Lead and Arsenic Foundations Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-F04-SS[F-119]C2-005	20-Jun-01	150		270		
01-F04-SS[F-120]C2-005	20-Jun-01	11		2.6		

Table A-4

Soil Analytical Results for Lead and Arsenic
Foundations Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-F04-SS[F-121]C2-005	21-Jun-01	130		8.1		
01-F04-SS[F-122]C2-005	21-Jun-01	7.8		3.1		
01-F04-SS[F-123]C2-005	21-Jun-01	39		22		
01-F04-SS[F-124]C2-005	21-Jun-01	21		150		
01-F04-SS[F-125]C2-005	21-Jun-01	6.4		43		
01-F04-ER[F-126]C4-000	21-Jun-01	0.01	U	0.023		
01-F12-SS[F-127]C2-005	21-Jun-01	4.4		3.9		
01-F15-SS[F-128]C2-005	26-Jun-01	2.8		1100		
01-F15-SS[F-129]C2-005	26-Jun-01	2.5		8.4		
01-F15-SS[F-130]C2-005	26-Jun-01	3.2		4.2		
01-F15-SS[F-131]C2-005	26-Jun-01	1.9	U	23		
01-F15-SS[F-132]C2-005	26-Jun-01	2.3		2.5		
01-F15-SS[F-133]C2-005	26-Jun-01	2.7		160		
01-F15-SS[F-134]C2-005	26-Jun-01	2.5		27		
01-F15-SS[F-135]C2-005	26-Jun-01	1.9	U	4.7		
01-F19-SS[F-136]C2-005	26-Jun-01	3.3		6.1		
01-F19-SS[F-137]C2-005	26-Jun-01	2		39		
01-F20-SS[F-138]C2-005	27-Jun-01	5.2		9.3		
01-F20-SS[F-139]C2-005	27-Jun-01	3.6		2.2	U	
01-F20-SS[F-140]C2-005	27-Jun-01	3.5		3.7		
01-F20-SS[F-141]C2-005	27-Jun-01	4.7		4.9		
01-F20-SS[F-142]C2-005	27-Jun-01	3.9		4.2		
01-F20-SS[F-143]C2-005	27-Jun-01	6.6		10		
01-F20-ER[F-144]C4-000	27-Jun-01	0.01	U	0.01	U	
01-F22-SS[F-145]C2-005	2-Jul-01	4.8		2.7		
01-F22-SS[F-146]C2-005	2-Jul-01	4.5		2.5		
01-F22-SS[F-147]C2-005	2-Jul-01	3.7		3.2		
01-F22-SS[F-148]C2-005	2-Jul-01	4.8		3.6		
01-F22-SS[F-149]C2-005	2-Jul-01	3.9		6.2		
01-F22-SS[F-150]C2-005	2-Jul-01	3.7		2		
01-F22-SS[F-151]C2-005	2-Jul-01	3.2		1.8	U	
01-F22-SS[F-152]C2-005	2-Jul-01	13		6.8		
01-F22-SS[F-153]C2-005	2-Jul-01	3.4		3		
01-F22-SS[F-154]C2-005	2-Jul-01	2.7		2.8		
01-F22-SS[F-155]C2-005	2-Jul-01	5.9		5		
01-F22-SS[F-156]C2-005	2-Jul-01	3.7		7.2		
01-F22-SS[F-157]C2-005	2-Jul-01	3.6		2.6		
01-F22-SS[F-158]C2-005	2-Jul-01	26		35		
01-F22-SS[F-159]C2-005	2-Jul-01	4.9		2.3		
01-F22-ER[F-160]C4-000	2-Jul-01	0.01	U	0.01	U	
01-F23-SS[F-161]C2-005	9-Jul-01	46		270		
01-F23-SS[F-162]C2-005	9-Jul-01	37		200		
01-F23-SS[F-163]C2-005	9-Jul-01	5.9		9.1		
01-F23-SS[F-164]C2-005	9-Jul-01	8.6		6.9		
01-F23-SS[F-165]C2-005	9-Jul-01	6.7		5		
01-F23-SS[F-166]C2-005	9-Jul-01	18		15		
01-F23-SS[F-167]C2-005	9-Jul-01	60		5.6		
01-F23-SS[F-168]C2-005	9-Jul-01	5.5		4.4		
01-F23-SS[F-169]C2-005	9-Jul-01	14		6.6		
01-F34-SS[F-170]C2-005	17-Jul-01	3.1		5.5	J	
01-F34-SS[F-171]C2-005	17-Jul-01	3		29	J	
01-F24-SS[F-172]C2-005	18-Jul-01	3.6		2		
01-F24-SS[F-173]C2-005	18-Jul-01	3.3		2.5		
01-F24-SS[F-174]C2-005	18-Jul-01	4.4		3.6		
01-F24-SS[F-175]C2-005	18-Jul-01	2.5		1.9	U	
01-F24-SS[F-176]C2-005	18-Jul-01	3.7		4		
01-F10-SS[F-177]C2-005	19-Jul-01	2.4		4.5		
01-F10-SS[F-178]C2-005	19-Jul-01	11		98		

Table A-4

Soil Analytical Results for Lead and Arsenic Foundations Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-F10-SS[F-179]C2-005	19-Jul-01	5.5		89		
01-F10-SS[F-180]C2-005	19-Jul-01	10		60		

Table A-4

Soil Analytical Results for Lead and Arsenic
Foundations Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-F10-SS[F-181]C2-005	19-Jul-01	12		16		
01-F10-SS[F-182]C2-005	19-Jul-01	4.6		18		
01-F37-SS[F-183]C2-005	30-Jul-01	8.6		9		
01-F37-SS[F-184]C2-005	30-Jul-01	13		10		
01-F37-SS[F-185]C2-005	30-Jul-01	26		9.9		
01-F37-SS[F-186]C2-005	30-Jul-01	8.6		14		
01-F37-SS[F-187]C2-005	30-Jul-01	3.6		3.9		
01-F37-SS[F-188]C2-005	30-Jul-01	13		62		
01-F37-SS[F-189]C2-005	30-Jul-01	4.9		3.5		01-F37-SS[F-190]C3-005
01-F37-SS[F-190]C3-005	30-Jul-01	4.1		2.4		
01-F37-SS[F-191]C2-005	30-Jul-01	4.7		5.5		
01-F37-SS[F-192]C2-005	30-Jul-01	6.9		5.2		
01-F36-SS[F-193]C2-005	1-Aug-01	25		16		
01-F36-SS[F-194]C2-005	1-Aug-01	5		8.5		
01-F36-SS[F-195]C2-005	1-Aug-01	5.1		7.3		
01-F36-SS[F-196]C2-005	1-Aug-01	4		5.7		
01-F36-SS[F-197]C2-005	1-Aug-01	4.8		6		
01-F36-ER[F-198]C4-000	1-Aug-01	0.01	U	0.01	U	
01-F29-SS[F-199]C2-005	2-Aug-01	6		10		
01-F29-SS[F-200]C2-005	2-Aug-01	9.2		20		
01-F29-SS[F-201]C2-005	2-Aug-01	4.3		74		
01-F29-SS[F-202]C2-005	2-Aug-01	3.9		12		
01-F29-SS[F-203C2-005	2-Aug-01	4.1		11		
01-F29-SS[F-204]C2-005	2-Aug-01	4.7		25		
01-F29-SS[F-205]C2-005	2-Aug-01	5.3		440		
01-F29-SS[F-206]C2-005	2-Aug-01	3.8		6.7		
01-F29-SS[F-207]C2-005	2-Aug-01	17		53		
01-F29-SS[F-208]C2-005	2-Aug-01	5.2		24		
01-F29-SS[F-209]C2-005	2-Aug-01	8.1		33		
01-F29-SS[F-210]C2-005	2-Aug-01	9.5		51		
01-F16-SS[F-211]C2-005	6-Aug-01	3.8		20		
01-F16-SS[F-212]C2-005	6-Aug-01	5		40		
01-F16-SS[F-213]C2-005	6-Aug-01	4.7		35		
01-F16-SS[F-214]C2-005	6-Aug-01	3.5		20		
01-F16-SS[F-215]C2-005	6-Aug-01	4.2		45		
01-F16-SS[F-216]C2-005	6-Aug-01	25		69		
01-F16-SS[F-217]C2-005	6-Aug-01	33		60		
01-F16-SS[F-218]C2-005	6-Aug-01	7.9		49		
01-F16-ER[F-219]C4-000	6-Aug-01	0.01	U	0.034		
01-F30-SS[F-220]C2-005	8-Aug-01	7.2		7.8		
01-F30-SS[F-221]C2-005	8-Aug-01	8.7		23		
01-F30-SS[F-222]C2-005	8-Aug-01	8.7		12		
01-F30-SS[F-223]C2-005	8-Aug-01	6.9		15		
01-F30-SS[F-224]C2-005	8-Aug-01	6		7.9		
01-F30-SS[F-225]C2-005	8-Aug-01	4.6		5.7		
01-F30-SS[F-226]C2-005	8-Aug-01	5		11		
01-F30-SS[F-227]C2-005	8-Aug-01	25		380		
01-F30-SS[F-228]C2-005	8-Aug-01	4.8		12		
01-F30-SS[F-229]C2-005	8-Aug-01	7.4		9.3		
01-F30-ER[F-230]C4-000	8-Aug-01	0.01		0.028		
01-F31-SS[F-231]C2-005	9-Aug-01	8.4		7		
01-F31-SS[F-232]C2-005	9-Aug-01	5.4		6		
01-F31-SS[F-233]C2-005	9-Aug-01	15		240		
01-F31-SS[F-234]C2-005	9-Aug-01	5.1		4.5		
01-F31-SS[F-235]C2-005	9-Aug-01	6.1		14		
01-F31-SS[F-236]C2-005	9-Aug-01	6.9		16		
01-F31-SS[F-237]C2-005	9-Aug-01	3.6		14		
01-F31-SS[F-238]C2-005	9-Aug-01	5.2		29		

Table A-4

Soil Analytical Results for Lead and Arsenic
Foundations Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-F31-SS[F-239]C2-005	9-Aug-01	4.9		5.1		
01-F31-SS[F-240]C2-005	9-Aug-01	6.5		6.1		

Table A-4

Soil Analytical Results for Lead and Arsenic
Foundations Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-F35-SS[F-241]C2-005	14-Aug-01	6		12		
01-F35-SS[F-242]C2-005	14-Aug-01	8.3		25		
01-F35-SS[F-243]C2-005	14-Aug-01	24		68		
01-F11-SS[F-244]C2-005	14-Aug-01	30		270		
01-F11-SS[F-245]C2-005	14-Aug-01	25		720		
01-F11-SS[F-246]C2-005	14-Aug-01	8.9		1200		
01-F11-SS[F-247]C2-005	14-Aug-01	15		93		
01-F11-SS[F-248]C2-005	14-Aug-01	13		830		
01-F11-SS[F-249]C2-005	14-Aug-01	20		2500		01-F11-SS[F-250]C3-005
01-F11-SS[F-250]C3-005	14-Aug-01	21		2500		
01-F11-SS[F-251]C2-005	14-Aug-01	10		1400		
01-F11-SS[F-252]C2-005	14-Aug-01	15		1800		
01-F11-SS[F-253]C2-005	14-Aug-01	34		120		
01-F11-SS[F-254]C2-005	14-Aug-01	24		1300		
01-F11-SS[F-255]C2-005	14-Aug-01	22		1500		
01-F11-SS[F-256]C2-005	14-Aug-01	8.3		520		
01-F11-SS[F-257]C2-005	14-Aug-01	9.1		4400		
01-F35-ER[F-258]C4-000	14-Aug-01	0.01	U	0.017	J	
01-F38-SS[F-259]C2-005	16-Aug-01	8.2		360		
01-F09-SS[F-260]C2-005	22-Aug-01	4.4		5.2		01-F09-SS[F-261]C3-005
01-F09-SS[F-261]C3-005	22-Aug-01	4.7		3.5		
01-F09-SS[F-262]C2-005	22-Aug-01	3.7		4.4		
01-F09-SS[F-263]C2-005	22-Aug-01	5.9		7.7		
01-F09-SS[F-264]C2-005	22-Aug-01	4		3.6		
01-F09-SS[F-265]C2-005	22-Aug-01	4		17		
01-F09-SS[F-266]C2-005	22-Aug-01	6		5.7		
01-F09-ER[F-267]C4-000	22-Aug-01	0.01	U	0.024		
01-F32-SS[F-268]C2-005	22-Aug-01	3.6		3.9		
01-F32-SS[F-269]C2-005	22-Aug-01	26		32		
01-F32-SS[F-270]C2-005	22-Aug-01	4.5		4.3		
01-F32-SS[F-271]C2-005	22-Aug-01	2.8		2.5		
01-F32-SS[F-272]C2-005	22-Aug-01	4.4		5.6		
01-F33-SS[F-273]C2-005	28-Aug-01	15		98		01-F33-SS[F-274]C3-005
01-F33-SS[F-274]C3-005	28-Aug-01	14		62		
01-F33-SS[F-275]C2-005	28-Aug-01	5.8		7.8		
01-F33-SS[F-276]C2-005	28-Aug-01	20		45		
01-F33-SS[F-277]C2-005	28-Aug-01	4.7		3		
01-F33-SS[F-278]C2-005	28-Aug-01	6.5		4		
01-F33-SS[F-279]C2-005	28-Aug-01	8.6		12		
01-F33-SS[F-280]C2-005	28-Aug-01	4.9		5.1		
02-F01-SS[F-42-2]C2-030	28-Aug-01	7.4		22		
02-F01-SS[F-47-2]C2-030	28-Aug-01	6		160		
02-F01-SS[F-64-2]C2-030	28-Aug-01	6		200		
02-F01-SS[F-67-2]C2-030	28-Aug-01	3.4		22		
02-F02-SS[F-72-2]C2-030	28-Aug-01	4.6		160		
02-F02-SS[F-76-2]C2-030	28-Aug-01	6		190		
02-F02-SS[F-77-2]C2-030	28-Aug-01	6.2		260		
02-F02-SS[F-78-2]C2-030	28-Aug-01	4.5		100		
02-F02-SS[F-79-2]C2-030	28-Aug-01	11		470		
02-F02-SS[F-80-2]C2-030	28-Aug-01	5.9		480		
02-F02-SS[F-81-2]C2-030	28-Aug-01	7.6		120		
02-F02-SS[F-83-2]C2-030	28-Aug-01	4.8		89		02-F02-SS[F-84-2]C3-030
02-F02-SS[F-84-2]C3-030	28-Aug-01	3.6		76		
02-F02-SS[F-85-2]C2-030	28-Aug-01	6.9		80		
02-F02-SS[F-88-2]C2-030	28-Aug-01	5		130		
02-F02-SS[F-89-2]C2-030	28-Aug-01	5.7		140		
02-F02-SS[F-90-2]C2-030	28-Aug-01	2.8		130		
02-F02-SS[F-91-2]C2-030	28-Aug-01	6.2		62		

Table A-4

Soil Analytical Results for Lead and Arsenic
Foundations Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
02-F02-SS[F-92-2]C2-030	28-Aug-01	3.9		49		
02-F03-SS[F-101-2]C2-030	28-Aug-01	3.7		7.5		

Table A-4

Soil Analytical Results for Lead and Arsenic
Found During Sampling, May - September 2001
Weyerhaeuser - Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
02-F04-SS[F-118-2]C2-030	28-Aug-01	14		3.9		
02-F04-SS[F-119-2]C2-030	28-Aug-01	31		25		
02-F04-SS[F-121-2]C2-030	28-Aug-01	34		21		
02-F04-SS[F-124-2]C2-030	28-Aug-01	12		45		
02-F23-SS[F-161-2]C2-030	29-Aug-01	6.7	J	180		
02-F23-SS[F-162-2]C2-030	29-Aug-01	12	J	31		
02-F11-SS[F-244-2]C2-030	29-Aug-01	16	J	720		
02-F11-SS[F-245-2]C2-030	29-Aug-01	11	J	2100		
02-F11-SS[F-246-2]C2-030	29-Aug-01	6.4	J	38		
02-F11-SS[F-248-2]C2-030	29-Aug-01	4.8	J	96		
02-F11-SS[F-249-2]C2-030	29-Aug-01	9.2	J	4900		02-F11-SS[F-250-2]C3-030
02-F11-SS[F-250-2]C3-030	29-Aug-01	10	J	710		
02-F11-SS[F-251-2]C2-030	29-Aug-01	8.5	J	150		
02-F11-SS[F-252-2]C2-030	29-Aug-01	5.4	J	140		
02-F11-SS[F-253-2]C2-030	29-Aug-01	24	J	65		
02-F11-SS[F-254-2]C2-030	29-Aug-01	20	J	280		
02-F11-SS[F-255-2]C2-030	29-Aug-01	11	J	47		
02-F11-SS[F-256-2]C2-030	29-Aug-01	4.9		9.5		
02-F11-SS[F-257-2]C2-030	29-Aug-01	4.3		60		
01-F11-ER[F-281]C4-000	29-Aug-01	0.01	U	0.01	U	
02-F29-SS[F-205-2]C2-030	30-Aug-01	3.9		13		
02-F30-SS[F-227-2]C2-030	30-Aug-01	5.6		35	J	
02-F31-SS[F-233-2]C2-030	30-Aug-01	5.7		54	J	
02-F08-SS[F-08-2]C2-030	30-Aug-01	2.6		90	J	
02-F15-SS[F-128-2]C2-030	30-Aug-01	6		200	J	
02-F15-SS[F-133-2]C2-030	30-Aug-01	4.1		55	J	
02-F38-SS[F-259-2]C2-030	30-Aug-01	5.2		57	J	
01-F38-ER[F-282]C4-000	30-Aug-01	0.01	U	0.01	U	
01-F20-SS[F-283]-C2-005	4-Sep-01	4.1		5.3		
01-F20-SS[F-284]-C2-005	4-Sep-01	4.9		5.8		01-F20-SS[F-285]-C3-005
01-F20-SS[F-285]-C3-005	4-Sep-01	6.5		5.8		
01-F20-SS[F-286]-C2-005	4-Sep-01	4.1		4.3		
01-F20-SS[F-287]-C2-005	4-Sep-01	3.7		4.3		
01-F20-SS[F-288]-C2-005	4-Sep-01	4.8		7.3		
01-F20-SS[F-289]-C2-005	4-Sep-01	4.4		5.2		
01-F20-SS[F-290]-C2-005	4-Sep-01	9.6		14		
01-F20-SS[F-291]-C2-005	4-Sep-01	5.9		18		
01-F20-SS[F-292]-C2-005	4-Sep-01	13		27		
01-F20-ER[F-293]-C4-000	4-Sep-01	0.01	U	0.11		
01-F20-SS-[F-294]-C2-005	5-Sep-01	6.8		25		01-F20-SS-[F-295]-C3-005
01-F20-SS-[F-295]-C3-005	5-Sep-01	7.5		32		
01-F20-SS-[F-296]-C2-005	5-Sep-01	17		130		
01-F20-SS-[F-297]-C2-005	5-Sep-01	5		34		
01-F20-SS-[F-298]-C2-005	5-Sep-01	6.9		21		
01-F20-SS-[F-299]-C2-005	5-Sep-01	25		29		
01-F20-SS-[F-300]-C2-005	5-Sep-01	15		11		
01-F34-SS-[F-301]-C2-005	5-Sep-01	5.8		5		
01-F34-SS-[F-302]-C2-005	5-Sep-01	6.2		14		
01-F34-SS-[F-303]-C2-005	5-Sep-01	6.6		14		
01-F21-SS-[F-304]-C2-005	5-Sep-01	9.1		70		
01-F21-SS-[F-305]-C2-005	5-Sep-01	5.8		30		
01-F21-SS-[F-306]-C2-005	5-Sep-01	8.5		240		
01-F21-ER-[F-307]-C4-000	5-Sep-01	0.01	U	0.034		
03-F11-SS-[F-252-3]-C2-050	10-Sep-01	7		360		
03-F11-SS-[F-251-3]-C2-050	10-Sep-01	3.9		51		
03-F11-SS-[F-245-3]-C2-050	10-Sep-01	5.6		8.5		
03-F11-SS-[F-249-3]-C2-050	10-Sep-01	39		190		
03-F11-SS-[F-244-3]-C2-050	10-Sep-01	5.1		120		

Table A-4

Soil Analytical Results for Lead and Arsenic
Foundations Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
03-F11-SS-[F-254-3]-C2-050	10-Sep-01	19		170		
03-F23-SS-[F-161-3]-C2-050	10-Sep-01	4		10		

Table A-4

Soil Analytical Results for Lead and Arsenic
Foundations Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-F18-SS-[F-308]-C2-020	12-Sep-01	4.8		4.6		
01-F18-SS-[F-309]-C2-020	12-Sep-01	5.3		3.9		
01-F18-SS-[F-310]-C2-020	12-Sep-01	5.6		4.3		
01-F18-SS-[F-311]-C2-020	12-Sep-01	4.7		4.9		
01-F18-SS-[F-312]-C2-020	12-Sep-01	15		2		
01-F18-SS-[F-313]-C2-020	12-Sep-01	4		3.5		
01-F18-SS-[F-314]-C2-020	12-Sep-01	3.5		2.7		
01-F18-SS-[F-315]-C2-020	12-Sep-01	5.1		4.7		
01-F18-SS-[F-316]-C2-020	12-Sep-01	7.5		31		
01-F18-SS-[F-317]-C2-020	12-Sep-01	5.7		17		
01-F18-SS-[F-318]-C2-020	12-Sep-01	4.8		13		
01-F18-SS-[F-319]-C2-020	12-Sep-01	16		230		
01-F18-SS-[F-320]-C2-020	12-Sep-01	4.7		32		
01-F18-SS-[F-321]-C2-020	12-Sep-01	5.4		29		
01-F18-SS-[F-322]-C2-020	12-Sep-01	53		7.1		
01-F18-SS-[F-323]-C2-020	12-Sep-01	5.1		92		
01-F18-ER-[F-324]-C4-000	12-Sep-01	0.01	U	0.01	U	
03-F01-SS-[F-47-3]-C2-050	13-Sep-01	7.7		6.1		
03-F01-SS-[F-64-3]-C2-050	13-Sep-01	10		470		
03-F02-SS-[F-72-3]-C2-050	13-Sep-01	5.4		270		
03-F02-SS-[F-76-3]-C2-050	13-Sep-01	4.7		19		03-F02-FD-[F-84-3]-C3-050
03-F02-SS-[F-77-3]-C2-050	13-Sep-01	10		20		03-F02-FD-[F-49-3]-C3-050
03-F02-SS-[F-79-3]-C2-050	13-Sep-01	13		230		
03-F02-SS-[F-80-3]-C2-050	13-Sep-01	11		310		
03-F02-SS-[F-81-3]-C2-050	13-Sep-01	11		170		
03-F02-SS-[F-88-3]-C2-050	13-Sep-01	5.6		62		
03-F02-SS-[F-89-3]-C2-050	13-Sep-01	6.6		120		
03-F02-SS-[F-90-3]-C2-050	13-Sep-01	2.7		150		
03-F02-FD-[F-84-3]-C3-050	13-Sep-01	7.6		30		
03-F02-FD-[F-49-3]-C3-050	13-Sep-01	75		12		
03-F15-SS-[F-128-3]-C2-050	13-Sep-01	4.4		2.8		
02-F20-SS-[F-296-2]C2-030	17-Sep-01	7.9		7.6		
02-F21-SS-[F-306-2]C2-030	17-Sep-01	5.1		2.8		
01-F18-SS-[F-325]C2-015	17-Sep-01	4.8		2.8		
04-F01-SS-[F-64-4]-C2-060	19-Sep-01	4.9		66		
04-F02-SS-[F-72-4]-C2-060	19-Sep-01	3.3		23		
04-F02-SS-[F-77-4]-C2-060	19-Sep-01	2.7		40		
04-F02-SS-[F-79-4]-C2-060	19-Sep-01	9.6		290		
04-F02-SS-[F-80-4]-C2-060	19-Sep-01	12		520		
04-F02-SS-[F-81-4]-C2-060	19-Sep-01	8		65		
04-F02-SS-[F-89-4]-C2-060	19-Sep-01	7.6		86		01-F02-FD-[F-326]-C3-000
04-F02-SS-[F-90-4]-C2-060	19-Sep-01	6.7		270		01-F02-FD-[F-327]-C3-000
01-F02-FD-[F-326]-C2-060	19-Sep-01	6.5		87		
01-F02-FD-[F-327]-C2-060	19-Sep-01	7.1		440		
02-F18-SS-[F-319-2]-C2-030	19-Sep-01	4.2		2.9		01-F18-FD-[F-328]-C3-030
01-F18-FD-[F-328]-C3-030	19-Sep-01	3.8		3.6		
01-F18-ER-[F-329]-C4-000	19-Sep-01	0.01	U	0.01	UJ	

* Reported as mg/kg unless otherwise specified
Rinsate blank sample. Results are reported as mg/L
U The analyte was analyzed for, but was not detected above the reporting limit shown.
J Estimated value, qualifier assigned during data review
UJ Analyte was analyzed for, but was not detected above the reporting limit shown. The reporting limit is estimated.

Table A-4

Soil Analytical Results for Lead and Arsenic Foundations Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *	Lead (mg/kg) *	Duplicate Sample ID

Table A-5

Soil Analytical Results for Lead and Arsenic
NGRR Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-N01-SS[NGRR-01]C2-005	7-Jun-01	4.1		6.4		
01-N01-SS[NGRR-02]C2-005	7-Jun-01	2.4		3.1		
01-N01-SS[NGRR-03]C2-005	7-Jun-01	3.3		3.1		
01-N01-SS[NGRR-04]C2-005	7-Jun-01	5.4		5		
01-N01-SS[NGRR-05]C2-005	7-Jun-01	6.1		3.2		
01-N01-SS[NGRR-06]C2-005	7-Jun-01	2.9		2.9		
01-N01-SS[NGRR-07]C2-005	7-Jun-01	130		16		01-N01-SS[NGRR-08]C3-005
01-N01-SS[NGRR-08]C3-005	7-Jun-01	140		22		
01-N01-SS[NGRR-09]C2-005	7-Jun-01	33		11		
01-N01-ER[NGRR-10]C4-000	7-Jun-01	0.01	U	0.01	U	
01-N01-SS[NGRR-11]C2-005	21-Jun-01	110		21		
01-N01-SS[NGRR-12]C2-005	21-Jun-01	84		13		
01-N01-SS[NGRR-13]C2-005	21-Jun-01	72		14		
01-N01-SS[NGRR-14]C2-005	26-Jun-01	4.6		6.9		01-N01-SS[NGRR-15]C3-005
01-N01-SS[NGRR-15]C3-005	26-Jun-01	4.4		7		
01-N01-SS[NGRR-16]C2-005	26-Jun-01	3.5		4.9		
01-N01-SS[NGRR-17]C2-005	26-Jun-01	2.9		31		
01-N01-ER[NGRR-18]C4-000	26-Jun-01	0.01	U	0.01	U	
01-N01-SS[NGRR-19]C2-005	2-Jul-01	3.8		3.2		01-N01-SS[NGRR-20]C3-005
01-N01-SS[NGRR-20]C3-005	2-Jul-01	6.4		2.9		
01-N01-SS[NGRR-21]C2-005	2-Jul-01	4.2		3.5		
01-N01-SS[NGRR-22]C2-005	2-Jul-01	6.5		4.3		
01-N01-SS[NGRR-23]C2-005	2-Jul-01	4.1		5.1		
01-N01-SS[NGRR-24]C2-005	9-Jul-01	4.9		7.5		
01-N01-SS[NGRR-25]C2-005	9-Jul-01	5.8		10		
01-N01-SS[NGRR-26]C2-005	9-Jul-01	19		6.4		
01-N01-SS[NGRR-27]C2-005	9-Jul-01	110		42		
01-N01-ER[NGRR-28]C4-000	9-Jul-01	0.015	U	0.005	U	
01-N01-SS[NGRR-29]C2-005	9-Jul-01	390		130		
01-N01-SS[NGRR-30]C2-005	9-Jul-01	320		100		
01-N01-SS[NGRR-31]C2-005	9-Jul-01	24		6.7		
01-N01-SS[NGRR-32]C2-005	9-Jul-01	5.1		4.1		
01-N01-SS[NGRR-33]C2-005	9-Jul-01	3.4		3.2		
01-N01-SS[NGRR-34]C2-005	11-Jul-01	4.5		7.9		
01-N01-SS[NGRR-35]C2-005	11-Jul-01	17		9.4		
01-N01-SS[NGRR-36]C2-005	11-Jul-01	6		25		01-N01-SS[NGRR-37]C3-005
01-N01-SS[NGRR-37]C3-005	11-Jul-01	6		24		
01-N01-SS[NGRR-38]C2-005	11-Jul-01	3.3		4.1		
01-N01-SS[NGRR-39]C2-005	11-Jul-01	4.7		5.4		
01-N01-SS[NGRR-40]C2-005	11-Jul-01	7.3		6.8		
01-N01-SS[NGRR-41]C2-005	11-Jul-01	4.4		3.9		
01-N01-SS[NGRR-42]C2-005	11-Jul-01	5.5		4		
01-N01-SS[NGRR-43]C2-005	11-Jul-01	5.3		4.4		
01-N01-SS[NGRR-44]C2-005	11-Jul-01	4.2		4.6		
01-N01-SS[NGRR-45]C2-005	11-Jul-01	4.5		4.1		
01-N01-SS[NGRR-46]C2-005	11-Jul-01	3.3		3.2		
01-N01-SS[NGRR-47]C2-005	11-Jul-01	5		4.3		
01-N01-SS[NGRR-48]C2-005	11-Jul-01	5		3.4		
01-N01-SS[NGRR-49]C2-005	11-Jul-01	7.7		4.3		
01-N01-SS[NGRR-50]C2-005	11-Jul-01	2.6		2.6		
01-N01-ER[NGRR-51]C4-000	11-Jul-01	0.01	U	0.01	U	
01-N01-SS[NGRR-52]C2-005	12-Jul-01	13		40		
01-N01-SS[NGRR-53]C2-005	12-Jul-01	6.6		7.6		
01-N01-SS[NGRR-54]C2-005	12-Jul-01	6.2		7.3		01-N01-SS[NGRR-55]C3-005
01-N01-SS[NGRR-55]C3-005	12-Jul-01	5.5		6		
01-N01-SS[NGRR-56]C2-005	12-Jul-01	4.3		3.5		
01-N01-SS[NGRR-57]C2-005	12-Jul-01	16		3.7		
01-N01-SS[NGRR-58]C2-005	12-Jul-01	2.9		2.6		
01-N01-SS[NGRR-59]C2-005	12-Jul-01	3.6		3.5		
01-N01-SS[NGRR-60]C2-005	12-Jul-01	2.4		2		
01-N01-ER[NGRR-61]C4-000	12-Jul-01	0.01	U	0.053	J	
01-N01-SS[NGRR-62]C2-005	17-Jul-01	21		6	J	
01-N01-SS[NGRR-63]C2-005	17-Jul-01	7.6		3.1	J	
01-N01-SS[NGRR-64]C2-005	17-Jul-01	2.8		1.8	UJ	
01-N01-SS[NGRR-65]C2-005	17-Jul-01	3.8		2.1	UJ	

Table A-5

Soil Analytical Results for Lead and Arsenic
NGRR Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-N01-SS[NGRR-66]C2-005	17-Jul-01	12		5.3	J	
01-N01-SS[NGRR-67]C2-005	17-Jul-01	3.9		7.3	J	
01-N01-ER[NGRR-68]C4-000	17-Jul-01	0.01	U	0.01	U	
01-N01-SS[NGRR-69]C2-005	17-Jul-01	210		18	J	
01-N01-SS[NGRR-70]C2-005	17-Jul-01	6.5		2.8	J	
01-N01-SS[NGRR-71]C2-005	17-Jul-01	9.9		2	UJ	
01-N01-SS[NGRR-72]C2-005	17-Jul-01	11		2.6	J	
01-N01-SS[NGRR-73]C2-005	17-Jul-01	3.7		1.8	UJ	
01-N01-SS[NGRR-74]C2-005	18-Jul-01	7.5		4.1		01-N01-SS[NGRR-75]C3-005
01-N01-SS[NGRR-75]C3-005	18-Jul-01	5.3		3.1		
01-N01-SS[NGRR-76]C2-005	18-Jul-01	3.6		3.3		
01-N01-SS[NGRR-77]C2-005	18-Jul-01	4.3		3.1		
01-N01-SS[NGRR-78]C2-005	18-Jul-01	15		3.5		
01-N01-SS[NGRR-79]C2-005	18-Jul-01	15		3.7		
01-N01-SS[NGRR-80]C2-005	18-Jul-01	27		6		
01-N01-SS[NGRR-81]C2-005	18-Jul-01	120		11		
01-N01-SS[NGRR-82]C2-005	18-Jul-01	9.7		6.5		
01-N01-SS[NGRR-83]C2-005	18-Jul-01	3		3.1		
01-N01-SS[NGRR-84]C2-005	18-Jul-01	12		4.5		
01-N01-SS[NGRR-85]C2-005	18-Jul-01	4.2		3.2		
01-N01-ER[NGRR-86]C4-000	18-Jul-01	0.01	U	0.032	J	
01-N01-SS[NGRR-87]C2-005	19-Jul-01	3.4		5.1		
01-N01-SS[NGRR-88]C2-005	19-Jul-01	3.9		7.5		
01-N01-SS[NGRR-89]C2-005	19-Jul-01	37		25		
01-N01-SS[NGRR-90]C2-005	19-Jul-01	7.2		45		
01-N01-SS[NGRR-91]C2-005	19-Jul-01	3.1		3.8		
01-N01-SS[NGRR-92]C2-005	19-Jul-01	11		22		
01-N01-SS[NGRR-93]C2-005	19-Jul-01	11		7.5		
01-N01-SS[NGRR-94]C2-005	19-Jul-01	14		6.5		
01-N01-SS[NGRR-95]C2-005	19-Jul-01	3.7		5		01-N01-SS[NGRR-96]C3-005
01-N01-SS[NGRR-96]C3-005	19-Jul-01	2.4		5.3		
01-N01-SS[NGRR-97]C2-005	19-Jul-01	3.4		5		
01-N01-SS[NGRR-98]C2-005	19-Jul-01	5.3		36		
01-N01-SS[NGRR-99]C2-005	19-Jul-01	2.9		4.9		
01-N01-ER[NGRR-100]C4-000	19-Jul-01	0.01	U	0.011		
01-N01-SS[NGRR-101]C2-005	19-Jul-01	6.5		5.8		
01-N01-SS[NGRR-102]C2-005	19-Jul-01	3.1		76		
01-N01-SS[NGRR-103]C2-005	23-Jul-01	6.1		9.8		01-N01-SS[NGRR-104]C3-005
01-N01-SS[NGRR-104]C3-005	23-Jul-01	6.7		7.5		
01-N01-SS[NGRR-105]C2-005	23-Jul-01	4.3		4.4		
01-N01-SS[NGRR-106]C2-005	23-Jul-01	4.3		3.6		
01-N01-SS[NGRR-107]C2-005	23-Jul-01	5		14		
01-N01-SS[NGRR-108]C2-005	23-Jul-01	5.3		6.1		
01-N01-SS[NGRR-109]C2-005	23-Jul-01	9.3		18		
01-N01-SS[NGRR-110]C2-005	23-Jul-01	10		24		
01-N01-SS[NGRR-111]C2-005	23-Jul-01	5.7		3.7		
01-N01-SS[NGRR-112]C2-005	23-Jul-01	6.9		5.8		
01-N01-SS[NGRR-113]C2-005	23-Jul-01	55		26		
01-N01-SS[NGRR-114]C2-005	23-Jul-01	13		29		
01-N01-SS[NGRR-115]C2-005	23-Jul-01	12		5.2		
01-N01-SS[NGRR-116]C2-005	23-Jul-01	19		9		
01-N01-SS[NGRR-117]C2-005	23-Jul-01	7.6		3.7		
01-N01-SS[NGRR-118]C2-005	23-Jul-01	6.9		4.1		
01-N01-ER[NGRR-119]C4-000	23-Jul-01	0.01	U	0.011	J	
01-N01-SS[NGRR-120]C2-005	23-Jul-01	13		19		
01-N01-SS[NGRR-121]C2-005	23-Jul-01	4.3		3.9		
01-N01-SS[NGRR-122]C2-005	23-Jul-01	5.7		8.1		
01-N01-SS[NGRR-123]C2-005	23-Jul-01	3.8		3.4		
01-N01-SS[NGRR-124]C2-005	23-Jul-01	10		6.6		
01-N01-SS[NGRR-125]C2-005	24-Jul-01	97		23		01-N01-SS[NGRR-126]C3-005
01-N01-SS[NGRR-126]C3-005	24-Jul-01	86		22		
01-N01-SS[NGRR-127]C2-005	24-Jul-01	10		6.3		
01-N01-SS[NGRR-128]C2-005	24-Jul-01	12		4.8		
01-N01-SS[NGRR-129]C2-005	24-Jul-01	7.7		3.5		
01-N01-SS[NGRR-130]C2-005	24-Jul-01	7		4.3		

Table A-5
Soil Analytical Results for Lead and Arsenic
NGRR Sampling, May - September 2001
Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-N01-SS[NGRR-131]C2-005	24-Jul-01	7.3		6.5		
01-N01-SS[NGRR-132]C2-005	24-Jul-01	35		490		
01-N01-SS[NGRR-133]C2-005	24-Jul-01	4.4		10		
01-N01-SS[NGRR-134]C2-005	24-Jul-01	21		19		
01-N01-SS[NGRR-135]C2-005	24-Jul-01	3.9		3.3		
01-N01-SS[NGRR-136]C2-005	24-Jul-01	24		14		
01-N01-ER[NGRR-137]C4-000	24-Jul-01	0.01	U	0.011	J	
01-N01-SS[NGRR-138]C2-005	30-Jul-01	4.8		9.4		
01-N01-SS[NGRR-139]C2-005	30-Jul-01	5.4		5.3		
01-N01-SS[NGRR-140]C2-005	30-Jul-01	18		16		
01-N01-SS[NGRR-141]C2-005	30-Jul-01	24		28		
01-N01-SS[NGRR-142]C2-005	30-Jul-01	13		15		
01-N01-SS[NGRR-143]C2-005	30-Jul-01	16		5.1		
01-N01-SS[NGRR-144]C2-005	30-Jul-01	11		8.8		
01-N01-SS[NGRR-145]C2-005	30-Jul-01	63		28		
01-N01-SS[NGRR-146]C2-005	30-Jul-01	28		12		
01-N01-ER[NGRR-147]C4-000	30-Jul-01	0.01	U	0.01	U	
01-N01-SS[NGRR-148]C2-005	31-Jul-01	13		8.2		
01-N01-SS[NGRR-149]C2-005	31-Jul-01	7.3		4.6		
01-N01-SS[NGRR-150]C2-005	31-Jul-01	5.8		3.4		
01-N01-SS[NGRR-151]C2-005	31-Jul-01	5.1		2.8		
01-N01-SS[NGRR-152]C2-005	31-Jul-01	3.6		2.1	U	
01-N01-SS[NGRR-153]C2-005	31-Jul-01	3.5		2.3		01-N01-SS[NGRR-154]C3-005
01-N01-SS[NGRR-154]C3-005	31-Jul-01	3.5		2.2		
01-N01-ER[NGRR-155]C4-000	31-Jul-01	0.01	U	0.01	U	
01-N01-SS[NGRR-156]C2-005	31-Jul-01	72		26		
01-N01-SS[NGRR-157]C2-005	31-Jul-01	6.4		6.8		
01-N01-SS[NGRR-158]C2-005	31-Jul-01	16		17		
01-N01-SS[NGRR-159]C2-005	31-Jul-01	10		3.9		
01-N01-SS[NGRR-160]C2-005	31-Jul-01	4.3		5		
01-N01-SS[NGRR-161]C2-005	31-Jul-01	4.7		5.5		
01-N01-SS[NGRR-162]C2-005	31-Jul-01	4.3		4.1		
01-N01-SS[NGRR-163]C2-005	31-Jul-01	10		9		
01-N01-SS[NGRR-164]C2-005	2-Aug-01	11		63		01-N01-SS[NGRR-165]C3-005
01-N01-SS[NGRR-165]C3-005	2-Aug-01	10		46		
01-N01-SS[NGRR-166]C2-005	2-Aug-01	5.7		8.5		
01-N01-SS[NGRR-167]C2-005	2-Aug-01	17		17		
01-N01-SS[NGRR-168]C2-005	2-Aug-01	7.7		13		
01-N01-SS[NGRR-169]C2-005	2-Aug-01	4.5		6.1		
01-N01-SS[NGRR-170]C2-005	2-Aug-01	5		6.1		
01-N01-SS[NGRR-171]C2-005	2-Aug-01	21		6.1		
01-N01-SS[NGRR-172]C2-005	2-Aug-01	6.4		7.6		
01-N01-SS[NGRR-173]C2-005	2-Aug-01	5.6		3.1		
01-N01-SS[NGRR-174]C2-005	2-Aug-01	3.5		2.2	U	
01-N01-SS[NGRR-175]C2-005	2-Aug-01	15		3.2		
01-N01-SS[NGRR-176]C2-005	2-Aug-01	4.6		2.7		
01-N01-ER[NGRR-177]C4-000	2-Aug-01	0.01	U	0.01	U	
01-N01-SS[NGRR-178]C2-005	6-Aug-01	3.5		37		
01-N01-SS[NGRR-179]C2-005	6-Aug-01	84		75		
01-N01-SS[NGRR-180]C2-005	6-Aug-01	18		9.9		
01-N01-SS[NGRR-181]C2-005	6-Aug-01	10		7.6		
01-N01-SS[NGRR-182]C2-005	6-Aug-01	23		11		
01-N01-SS[NGRR-183]C2-005	6-Aug-01	10		13		
01-N01-SS[NGRR-184]C2-005	6-Aug-01	5.2		13		
01-N01-SS[NGRR-185]C2-005	6-Aug-01	4.7		5.7		
01-N01-SS[NGRR-186]C2-005	6-Aug-01	6.2		8		
01-N01-SS[NGRR-187]C2-005	6-Aug-01	35		11		01-N01-SS[NGRR-188]C3-005
01-N01-SS[NGRR-188]C3-005	6-Aug-01	40		12		
01-N01-SS[NGRR-189]C2-005	6-Aug-01	26		21		
01-N01-SS[NGRR-190]C2-005	6-Aug-01	13		9.2		
01-N01-SS[NGRR-191]C2-005	6-Aug-01	15		8.8		
01-N01-SS[NGRR-192]C2-005	6-Aug-01	31		17		
01-N01-SS[NGRR-193]C2-005	7-Aug-01	11		57		01-N01-SS[NGRR-194]C3-005
01-N01-SS[NGRR-194]C3-005	7-Aug-01	11		61		
01-N01-SS[NGRR-195]C2-005	7-Aug-01	18		53		

Table A-5

Soil Analytical Results for Lead and Arsenic
NGRR Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-N01-SS[NGRR-196]C2-005	7-Aug-01	50		180		
01-N01-SS[NGRR-197]C2-005	7-Aug-01	76		30		
01-N01-SS[NGRR-198]C2-005	7-Aug-01	13		30		
01-N01-SS[NGRR-199]C2-005	7-Aug-01	4.6		7.3		
01-N01-SS[NGRR-200]C2-005	7-Aug-01	5.2		55		
01-N01-SS[NGRR-201]C2-005	7-Aug-01	5.3		14		
01-N01-SS[NGRR-202]C2-005	7-Aug-01	6.3		24		
01-N01-SS[NGRR-203]C2-005	7-Aug-01	46		120		
01-N01-SS[NGRR-204]C2-005	7-Aug-01	11		55		
01-N01-SS[NGRR-205]C2-005	7-Aug-01	5.6		36		
01-N01-SS[NGRR-206]C2-005	7-Aug-01	4.6		9.2		
01-N01-SS[NGRR-207]C2-005	7-Aug-01	6		51		
01-N01-ER[NGRR-208]C4-000	7-Aug-01	0.01	U	0.027		
01-N01-SS[NGRR-209]C2-005	8-Aug-01	8		7.5		
01-N01-SS[NGRR-210]C2-005	8-Aug-01	11		9.4		
01-N01-SS[NGRR-211]C2-005	8-Aug-01	7.7		4.1		
01-N01-SS[NGRR-212]C2-005	8-Aug-01	5		3.6		
01-N01-SS[NGRR-213]C2-005	8-Aug-01	4.9		3.3		
01-N01-SS[NGRR-214]C2-005	8-Aug-01	38		11		
01-N01-SS[NGRR-215]C2-005	8-Aug-01	55		4.2		
01-N01-SS[NGRR-216]C2-005	8-Aug-01	7.2		4.8		
01-N01-SS[NGRR-217]C2-005	8-Aug-01	5.2		4.8		
01-N01-SS[NGRR-218]C2-005	8-Aug-01	50		66		
01-N01-SS[NGRR-219]C2-005	8-Aug-01	7.4		6.2		
01-N01-SS[NGRR-220]C2-005	8-Aug-01	9.8		6.7		
01-N01-SS[NGRR-221]C2-005	8-Aug-01	9.1		5.4		
01-N01-SS[NGRR-222]C2-005	8-Aug-01	14		5.3		
01-N01-SS[NGRR-223]C2-005	8-Aug-01	6.6		5.6		01-N01-SS[NGRR-224]C3-005
01-N01-SS[NGRR-224]C3-005	8-Aug-01	6		6		
01-N01-SS[NGRR-225]C2-005	8-Aug-01	5.6		5.5		
01-N01-SS[NGRR-226]C2-005	8-Aug-01	18		25		
01-N01-SS[NGRR-227]C2-005	8-Aug-01	4.9		6.2		
01-N01-SS[NGRR-228]C2-005	8-Aug-01	5		4.2		
01-N01-SS[NGRR-229]C2-005	8-Aug-01	4.9		4.4		
01-N01-SS[NGRR-230]C2-005	8-Aug-01	16		9.4		
01-N01-SS[NGRR-231]C2-005	9-Aug-01	6.5		25		
01-N01-SS[NGRR-232]C2-005	9-Aug-01	6		4.9		
01-N01-SS[NGRR-233]C2-005	9-Aug-01	6.4		6		
01-N01-SS[NGRR-234]C2-005	9-Aug-01	5.1		4.8		
01-N01-SS[NGRR-235]C2-005	9-Aug-01	6.5		7.4		01-N01-SS[NGRR-236]C3-005
01-N01-SS[NGRR-236]C3-005	9-Aug-01	6.5		6.6		
01-N01-SS[NGRR-237]C2-005	9-Aug-01	4.8		6.1		
01-N01-SS[NGRR-238]C2-005	9-Aug-01	6		7.8		
01-N01-SS[NGRR-239]C2-005	9-Aug-01	4.6		5.4		
01-N01-SS[NGRR-240]C2-005	9-Aug-01	11		13		
01-N01-SS[NGRR-241]C2-005	9-Aug-01	13		8.3		
01-N01-SS[NGRR-242]C2-005	9-Aug-01	3.9		5.2		
01-N01-SS[NGRR-243]C2-005	9-Aug-01	5.9		4.8		
01-N01-ER[NGRR-244]C4-000	9-Aug-01	0.01	U	0.01	U	
01-N01-SS[NGRR-245]C2-005	13-Aug-01	8.6		10		01-N01-SS[NGRR-246]C3-005
01-N01-SS[NGRR-246]C3-005	13-Aug-01	9.3		9		
01-N01-SS[NGRR-247]C2-005	13-Aug-01	9.8		8.2		
01-N01-SS[NGRR-248]C2-005	13-Aug-01	7.8		11		
01-N01-SS[NGRR-249]C2-005	13-Aug-01	12		16		
01-N01-SS[NGRR-250]C2-005	13-Aug-01	7.9		6.6		
01-N01-SS[NGRR-251]C2-005	13-Aug-01	6.8		4.8		
01-N01-SS[NGRR-252]C2-005	13-Aug-01	9		6.1		
01-N01-SS[NGRR-253]C2-005	13-Aug-01	7.8		4.3		
01-N01-SS[NGRR-254]C2-005	13-Aug-01	6.3		5		
01-N01-SS[NGRR-255]C2-005	13-Aug-01	17		4.8		
01-N01-SS[NGRR-256]C2-005	13-Aug-01	9.6		4.8		
01-N01-ER[NGRR-257]C4-000	13-Aug-01	0.01	U	0.01	UJ	
01-N01-SS[NGRR-258]C2-005	13-Aug-01	6.8		5.7		
01-N01-SS[NGRR-259]C2-005	13-Aug-01	10		5.2		
01-N01-SS[NGRR-260]C2-005	13-Aug-01	6.8		6.6		

Table A-5

Soil Analytical Results for Lead and Arsenic
NGRR Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-N01-SS[NGRR-261]C2-005	13-Aug-01	6.7		5.6		01-N01-SS[NGRR-262]C3-005
01-N01-SS[NGRR-262]C3-005	13-Aug-01	7.4		6.3		
01-N01-SS[NGRR-263]C2-005	13-Aug-01	7.5		4.5		
01-N01-SS[NGRR-264]C2-005	13-Aug-01	9.5		6.2		
01-N01-SS[NGRR-265]C2-005	13-Aug-01	4		4.1		
01-N01-SS[NGRR-266]C2-005	13-Aug-01	6.7		5.8		
01-N01-SS[NGRR-267]C2-005	13-Aug-01	8.9		8		
01-N01-SS[NGRR-268]C2-005	13-Aug-01	9.5		6.8		
01-N01-SS[NGRR-269]C2-005	13-Aug-01	6.7		7		
01-N01-SS[NGRR-270]C2-005	13-Aug-01	8.2		9.1		
01-N01-SS[NGRR-271]C2-005	13-Aug-01	10		7.8		
01-N01-SS[NGRR-272]C2-005	13-Aug-01	11		6.6		
01-N01-SS[NGRR-273]C2-005	13-Aug-01	8.9		7.9		
01-N01-SS[NGRR-274]C2-005	13-Aug-01	8.5		7.9		
01-N01-SS[NGRR-275]C2-005	13-Aug-01	19		22		
01-N01-SS[NGRR-276]C2-005	13-Aug-01	25		360		
01-N01-SS[NGRR-277]C2-005	14-Aug-01	20		15		
01-N01-SS[NGRR-278]C2-005	14-Aug-01	34		110		
01-N01-SS[NGRR-279]C2-005	14-Aug-01	140		79		01-N01-SS[NGRR-280]C3-005
01-N01-SS[NGRR-280]C3-005	14-Aug-01	170		97		
01-N01-SS[NGRR-281]C2-005	14-Aug-01	47		230		
01-N01-SS[NGRR-282]C2-005	14-Aug-01	520		110		
01-N01-SS[NGRR-283]C2-005	15-Aug-01	12		20		01-N01-SS[NGRR-284]C3-005
01-N01-SS[NGRR-284]C3-005	15-Aug-01	11		18		
01-N01-SS[NGRR-285]C2-005	15-Aug-01	7.3		8.8		
01-N01-SS[NGRR-286]C2-005	15-Aug-01	7.1		6.7		
01-N01-SS[NGRR-287]C2-005	15-Aug-01	6		5.1		
01-N01-SS[NGRR-288]C2-005	15-Aug-01	7.4		5.9		
01-N01-SS[NGRR-289]C2-005	15-Aug-01	6.2		4.3		
01-N01-SS[NGRR-290]C2-005	15-Aug-01	8.2		5.1		
01-N01-SS[NGRR-291]C2-005	15-Aug-01	8.4		8.2		
01-N01-SS[NGRR-292]C2-005	15-Aug-01	12		12		
01-N01-SS[NGRR-293]C2-005	15-Aug-01	6.6		5.5		
01-N01-SS[NGRR-294]C2-005	15-Aug-01	6.8		7.3		
01-N01-SS[NGRR-295]C2-005	15-Aug-01	7.1		4.9		
01-N01-ER[NGRR-296]C4-000	15-Aug-01	0.01	U	0.011	J	
01-N01-SS[NGRR-297]C2-005	15-Aug-01	8.4		7.7		
01-N01-SS[NGRR-298]C2-005	15-Aug-01	7.8		9.6		
01-N01-SS[NGRR-299]C2-005	15-Aug-01	18		26		
01-N01-SS[NGRR-300]C2-005	15-Aug-01	5.9		55		
01-N01-SS[NGRR-301]C2-005	16-Aug-01	81		37		01-N01-SS[NGRR-302]C3-005
01-N01-SS[NGRR-302]C3-005	16-Aug-01	99		46		
01-N01-SS[NGRR-303]C2-005	16-Aug-01	46		20		
01-N01-SS[NGRR-304]C2-005	16-Aug-01	13		7.2		
01-N01-SS[NGRR-305]C2-005	16-Aug-01	13		10		
01-N01-SS[NGRR-306]C2-005	16-Aug-01	4.6		2.6		
01-N01-SS[NGRR-307]C2-005	16-Aug-01	17		5.5		
01-N01-SS[NGRR-308]C2-005	16-Aug-01	19		7.1		
01-N01-SS[NGRR-309]C2-005	16-Aug-01	34		11		
01-N01-SS[NGRR-310]C2-005	16-Aug-01	34		37		
01-N01-ER[NGRR-311]C4-000	16-Aug-01	0.01	U	0.01	UJ	
01-N01-SS[NGRR-312]C2-005	16-Aug-01	8		10		
01-N01-SS[NGRR-313]C2-005	16-Aug-01	12		13		
01-N01-SS[NGRR-314]C2-005	16-Aug-01	14		20		
01-N01-SS[NGRR-315]C2-005	16-Aug-01	5.5		5.7		
01-N01-SS[NGRR-316]C2-005	16-Aug-01	5.9		15		
01-N01-SS[NGRR-317]C2-005	16-Aug-01	4.9		8.2		
01-N01-SS[NGRR-318]C2-005	16-Aug-01	24		16		
01-N01-SS[NGRR-319]C2-005	16-Aug-01	8.9		76		
01-N01-SS[NGRR-320]C2-005	16-Aug-01	6.1		9.5		
01-N01-SS[NGRR-321]C2-005	20-Aug-01	42	U	21	U	01-N01-SS[NGRR-322]C3-005
01-N01-SS[NGRR-322]C3-005	20-Aug-01	41	U	21	U	
01-N01-SS[NGRR-323]C2-005	20-Aug-01	40	U	41		
01-N01-SS[NGRR-324]C2-005	20-Aug-01	37	U	18	U	
01-N01-SS[NGRR-325]C2-005	20-Aug-01	36	U	18	U	

Table A-5

Soil Analytical Results for Lead and Arsenic
NGRR Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-N01-SS[NGRR-326]C2-005	20-Aug-01	37	U	18	U	
01-N01-SS[NGRR-327]C2-005	20-Aug-01	36	U	18	U	
01-N01-SS[NGRR-328]C2-005	20-Aug-01	39	U	19	U	
01-N01-SS[NGRR-329]C2-005	20-Aug-01	37	U	19	U	
01-N01-SS[NGRR-330]C2-005	20-Aug-01	39	U	19	U	
01-N01-SS[NGRR-331]C2-005	20-Aug-01	35	U	18	U	
01-N01-ER[NGRR-332]C4-000	20-Aug-01	0.01	U	0.01	U	
01-N01-SS[NGRR-333]C2-005	20-Aug-01	46	U	23	U	
01-N01-SS[NGRR-334]C2-005	20-Aug-01	42	U	21	U	
01-N01-SS[NGRR-335]C2-005	20-Aug-01	43	U	22	U	
01-N01-SS[NGRR-336]C2-005	20-Aug-01	38	U	19	U	
01-N01-SS[NGRR-337]C2-005	20-Aug-01	39	U	19	U	
01-N01-SS[NGRR-338]C2-005	20-Aug-01	41	U	20	U	
01-N01-SS[NGRR-339]C2-005	20-Aug-01	38	U	19	U	
01-N01-SS[NGRR-340]C2-005	20-Aug-01	39	U	19	U	
01-N01-SS[NGRR-341]C2-005	20-Aug-01	41	U	21	U	
01-N01-SS[NGRR-342]C2-005	20-Aug-01	42	U	46	J	01-N01-SS[NGRR-343]C3-005
01-N01-SS[NGRR-343]C3-005	20-Aug-01	42	U	21	UJ	
01-N01-SS[NGRR-344]C2-005	20-Aug-01	43	U	21	UJ	
01-N01-SS[NGRR-345]C2-005	20-Aug-01	39	U	20	UJ	
01-N01-SS[NGRR-346]C2-005	20-Aug-01	41	U	21	UJ	
01-N01-SS[NGRR-347]C2-005	20-Aug-01	38	U	19	UJ	
01-N01-SS[NGRR-348]C2-005	20-Aug-01	41	U	20	UJ	
01-N01-SS[NGRR-349]C2-005	20-Aug-01	38	U	19	UJ	
01-N01-SS[NGRR-350]C2-005	20-Aug-01	40	U	20	UJ	
01-N01-SS[NGRR-351]C2-005	20-Aug-01	42	U	21	UJ	
01-N01-SS[NGRR-352]C2-005	21-Aug-01	40	U	20	UJ	01-N01-SS[NGRR-353]C3-005
01-N01-SS[NGRR-353]C3-005	21-Aug-01	43	U	21	UJ	
01-N01-SS[NGRR-354]C2-005	21-Aug-01	43	U	21	UJ	
01-N01-SS[NGRR-355]C2-005	21-Aug-01	45	U	22	UJ	
01-N01-SS[NGRR-356]C2-005	21-Aug-01	42	U	21	UJ	
01-N01-SS[NGRR-357]C2-005	21-Aug-01	40	U	20	UJ	
01-N01-SS[NGRR-358]C2-005	21-Aug-01	37	U	18	UJ	
01-N01-SS[NGRR-359]C2-005	21-Aug-01	43	U	22	UJ	
01-N01-SS[NGRR-360]C2-005	21-Aug-01	44	U	22	UJ	
01-N01-SS[NGRR-361]C2-005	21-Aug-01	40	U	20	UJ	
01-N01-SS[NGRR-362]C2-005	21-Aug-01	5.5		13		
01-N01-SS[NGRR-363]C2-005	21-Aug-01	6.7		8.3		
01-N01-SS[NGRR-364]C2-005	21-Aug-01	6		5.3		
01-N01-SS[NGRR-365]C2-005	21-Aug-01	3.6		3.4		
01-N01-SS[NGRR-366]C2-005	21-Aug-01	10		5.9		
01-N01-SS[NGRR-367]C2-005	21-Aug-01	6		7.2		
01-N01-ER[NGRR-368]C4-000	21-Aug-01	0.01	U	0.01	U	
01-N01-SS[NGRR-369]C2-005	21-Aug-01	11		6.4		
01-N01-SS[NGRR-370]C2-005	21-Aug-01	12		15		
01-N01-SS[NGRR-371]C2-005	21-Aug-01	4.5		5.6		
01-N01-SS[NGRR-372]C2-005	21-Aug-01	4.2		4.9		
01-N01-SS[NGRR-373]C2-005	21-Aug-01	6.2		5.1		
01-N01-SS[NGRR-374]C2-005	21-Aug-01	5.5		4		
01-N01-SS[NGRR-375]C2-005	21-Aug-01	4.2		3.6		
01-N01-SS[NGRR-376]C2-005	21-Aug-01	4.2		3.8		
01-N01-SS[NGRR-377]C2-005	21-Aug-01	7.2		7.1		
01-N01-SS[NGRR-378]C2-005	21-Aug-01	5.5		6.4		
01-N01-SS[NGRR-379]C2-005	21-Aug-01	5.8		5.1		
01-N01-SS[NGRR-380]C2-005	22-Aug-01	3.1		3.4		
01-N01-SS[NGRR-381]C2-005	22-Aug-01	2.5		2.7		
01-N01-SS[NGRR-382]C2-005	22-Aug-01	3.5		2.7		
01-N01-SS[NGRR-383]C2-005	23-Aug-01	5.2		5.5		01-N01-SS[NGRR-384]C3-005
01-N01-SS[NGRR-384]C3-005	23-Aug-01	4.9		5.2		
01-N01-SS[NGRR-385]C2-005	23-Aug-01	5.7		6.8		
01-N01-SS[NGRR-386]C2-005	23-Aug-01	6		3.8		
01-N01-SS[NGRR-387]C2-005	23-Aug-01	3.5		2.2	U	
01-N01-SS[NGRR-388]C2-005	23-Aug-01	6.6		6.2		
01-N01-SS[NGRR-389]C2-005	23-Aug-01	8.6		7		
01-N01-SS[NGRR-390]C2-005	23-Aug-01	5.9		3.7		

Table A-5

Soil Analytical Results for Lead and Arsenic
NGRR Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-N01-SS[NGRR-391]C2-005	23-Aug-01	7.1		3.4		
01-N01-SS[NGRR-392]C2-005	23-Aug-01	7.9		4.3		
01-N01-SS[NGRR-393]C2-005	23-Aug-01	3.6		62		
01-N01-ER[NGRR-394]C4-000	23-Aug-01	0.01	U	0.01	U	
01-N01-SS[NGRR-395]C2-005	23-Aug-01	4		4		
01-N01-SS[NGRR-396]C2-005	23-Aug-01	3.4		3.6		
01-N01-SS[NGRR-397]C2-005	23-Aug-01	7.8		17		
01-N01-SS[NGRR-398]C2-005	23-Aug-01	3.3		3.1		
01-N01-SS[NGRR-399]C2-005	23-Aug-01	13		15		
01-N01-SS[NGRR-400]C2-005	23-Aug-01	3.3		4.5		
01-N01-SS[NGRR-401]C2-005	23-Aug-01	4.5		2.7		
01-N01-SS[NGRR-402]C2-005	23-Aug-01	10		8.3		
01-N01-SS[NGRR-403]C2-005	23-Aug-01	8.4		9.3		
01-N01-SS[NGRR-404]C2-005	23-Aug-01	8.7		6.8		
01-N01-SS[NGRR-405]C2-005	23-Aug-01	7		6.1		
01-N01-SS[NGRR-406]C2-005	23-Aug-01	6.5		9		
01-N01-SS[NGRR-407]C2-005	23-Aug-01	9.8		16		
01-N01-SS[NGRR-408]C2-005	23-Aug-01	13		15		

Table A-5
Soil Analytical Results for Lead and Arsenic
NGRR Sampling, May - September 2001
Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-N01-SS[NGRR-409]C2-005	23-Aug-01	10		11		
01-N01-SS[NGRR-410]C2-005	23-Aug-01	14		18		
01-N01-SS[NGRR-411]C2-005	27-Aug-01	9.7		8.8		01-N01-SS[NGRR-412]C3-005
01-N01-SS[NGRR-412]C3-005	27-Aug-01	8.9		7.4		
01-N01-SS[NGRR-413]C2-005	27-Aug-01	3		2	U	
01-N01-SS[NGRR-414]C2-005	27-Aug-01	10		8.2		
01-N01-SS[NGRR-415]C2-005	27-Aug-01	6.6		3.9		
01-N01-SS[NGRR-416]C2-005	27-Aug-01	7.7		7.7		
01-N01-SS[NGRR-417]C2-005	27-Aug-01	11		11		
01-N01-SS[NGRR-418]C2-005	27-Aug-01	8.3		5.4		
01-N01-SS[NGRR-419]C2-005	27-Aug-01	11		8.6		
01-N01-SS[NGRR-420]C2-005	27-Aug-01	6.3		4		
01-N01-SS[NGRR-421]C2-005	27-Aug-01	6.4		5		
01-N01-SS[NGRR-422]C2-005	27-Aug-01	52		8.6		
01-N01-SS[NGRR-423]C2-005	27-Aug-01	19		2.4		
01-N01-SS[NGRR-424]C2-005	27-Aug-01	4.8		2.1		
01-N01-SS[NGRR-425]C2-005	27-Aug-01	4.4		3		
01-N01-SS[NGRR-426]C2-005	27-Aug-01	6.7		3.8		
01-N01-ER[NGRR-427]C4-000	27-Aug-01	0.01	U	0.01	U	
01-N01-SS[NGRR-428]C2-005	27-Aug-01	6.8		2.7		
01-N01-SS[NGRR-429]C2-005	27-Aug-01	14		8.2		
01-N01-SS[NGRR-430]C2-005	27-Aug-01	35		7.4		
01-N01-SS[NGRR-431]C2-005	27-Aug-01	25		13		
01-N01-SS[NGRR-432]C2-005	27-Aug-01	65		39		
01-N01-SS[NGRR-433]C2-005	27-Aug-01	30		62		
01-N01-SS[NGRR-434]C2-005	27-Aug-01	21		9.9		
02-N01-SS[NGRR-203-2]C2-025	28-Aug-01	16		37		
02-N01-SS[NGRR-196-2]C2-025	28-Aug-01	16		81		
02-N01-SS[NGRR-197-2]C2-025	28-Aug-01	5.1		10		
02-N01-SS[NGRR-11-2]C2-025	28-Aug-01	2.8		2.7		
02-N01-SS[NGRR-12-2]C2-025	28-Aug-01	5.1		3.2		
02-N01-SS[NGRR-13-2]C2-025	28-Aug-01	4.6		3.6		
02-N01-SS[NGRR-276-2]C2-025	28-Aug-01	7.2		97		
01-N01-ER[NGRR-435]C4-000	28-Aug-01	0.01	U	0.01	U	
02-N01-SS[NGRR-27-2]C2-025	29-Aug-01	31	J	14		
02-N01-SS[NGRR-29-2]C2-025	29-Aug-01	17	J	16		
02-N01-SS[NGRR-30-2]C2-025	29-Aug-01	6	J	4.8		
02-N01-SS[NGRR-69-2]C2-025	30-Aug-01	14		5.4		
02-N01-SS[NGRR-81-2]C2-025	30-Aug-01	6.9		3.5		
02-N01-SS[NGRR-156-2]C2-025	30-Aug-01	5.3		2		
02-N01-SS[NGRR-145-2]C2-025	30-Aug-01	7.2		250	J	
02-N01-SS[NGRR-07-2]C2-025	30-Aug-01	4.6		22	J	02-N01-SS[NGRR-08-2]C3-025
02-N01-SS[NGRR-08-2]C3-025	30-Aug-01	4.5		21	J	
02-N01-SS[NGRR-279-2]C2-025	30-Aug-01	14		34	J	02-N01-SS[NGRR-280-2]C3-025
02-N01-SS[NGRR-280-2]C3-025	30-Aug-01	11		19	J	
02-N01-SS[NGRR-281-2]C2-025	30-Aug-01	35		40	J	
02-N01-SS[NGRR-282-2]C2-025	30-Aug-01	7.3		29	J	
02-N01-SS[NGRR-179-2]C2-025	30-Aug-01	52		140	J	
02-N01-SS[NGRR-125-2]C2-025	30-Aug-01	4.9		15	J	02-N01-SS[NGRR-126-2]C3-025
02-N01-SS[NGRR-126-2]C3-025	30-Aug-01	5.7		14	J	
02-N01-SS[NGRR-301-2]C2-025	30-Aug-01	6		14	J	02-N01-SS[NGRR-302-2]C3-025
02-N01-SS[NGRR-302-2]C3-025	30-Aug-01	5.3		8.6	J	
02-N01-SS[NGRR-132-2]C2-025	30-Aug-01	3.9		9.9	J	
01-N01-SS-[NGRR-436]-C2-020	12-Sep-01	3.5		2.6		
01-N01-SS-[NGRR-437]-C2-020	12-Sep-01	2.8		2.2		
02-N01-SS-[NGRR-432-2]-C2-030	13-Sep-01	4.1		29		
03-N01-SS-[NGRR-179-3]-C2-050	13-Sep-01	4.8		87		
03-N01-SS-[NGRR-145-3]-C2-050	13-Sep-01	6		5.5		
02-N01-ER-[NGRR-432-2]-C4-000	13-Sep-01	0.01	U	0.01	U	
01-N01-SS-[NGRR-439]C2-015	17-Sep-01	5.4		3.7		
01-N01-SS-[NGRR-440]C2-015	17-Sep-01	13		5.8		

* Reported as mg/kg unless otherwise specified
Rinsate blank sample. Results are reported as mg/L

Table A-5

Soil Analytical Results for Lead and Arsenic
NGRR Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *	Lead (mg/kg) *	*Duplicate Sample ID*

U The analyte was analyzed for, but was not detected above the reporting limit shown.
J Estimated value, qualifier assigned during data review
UJ Analyte was analyzed for, but was not detected above the reporting limit shown. The reporting limit is estimated.

Table A-6

Soil Analytical Results for Lead, Arsenic and Explosives
Industrial Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Metals				Explosives						Field Duplicate Sample ID
		Arsenic (mg/kg)		Lead (mg/kg)		2,4,6-Trinitrotoluene (mg/kg)		2,4-Dinitrotoluene (mg/kg)		2,6-Dinitrotoluene (mg/kg)		
03-IN01-SS[10-VS-5]D2-7.0	1-Aug-01	NA		NA		38	J	0.19	J	0.05	UJ	
03-IN01-SS[10-VS-6]D2-5.0	1-Aug-01	NA		NA		1		0.046	U	0.046	U	
03-IN01-SS[10-VS-7]D2-5.0	1-Aug-01	NA		NA		25		0.049	U	0.049	U	
03-IN01-SS[10-VS-8]D2-5.0	1-Aug-01	NA		NA		0.073	J	0.044	U	0.044	U	
03-IN01-SS[10-VS-9]D2-5.0	1-Aug-01	NA		NA		0.12	J	0.044	U	0.044	U	03-IN01-SS[10-VS-10]D3-5.0
03-IN01-SS[10-VS-10]D3-5.0	1-Aug-01	NA		NA		0.14	J	0.043	U	0.043	U	
18-TR-18N,S-1	15-Aug-01	NA		NA		0.045	U	0.023	J	0.045	U	
03-IN01-SS-[10-VS-11]-C2-100	4-Sep-01	4.3		9.4	U	0.2		0.047	U	0.047	U	
03-IN01-SS-[10-VS-12]-C2-050	4-Sep-01	3.9		10	U	0.048	U	0.048	U	0.048	U	

NA Not Analyzed
U The analyte was analyzed for, but was not detected above the reporting limit shown.
J Estimated value, qualifier assigned during data review
UJ Analyte was analyzed for, but was not detected above the reporting limit shown. The reporting limit is estimated.

Table A-7

Soil Analytical Results for Lead and Arsenic
Sequalitchew Creek NGRR Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg)		Lead (mg/kg)		Duplicate Sample ID
02-OS02-SS[LR-68-0-02]C02-1.5	1-Aug-01	98		210		
02-OS02-SS[LR-68-75-02]C02-1.5	1-Aug-01	99		16		
02-OS02-SS[LR-68-525E-02]C02-1.5	1-Aug-01	85		190		
02-OS02-SS[LR-68-600E-02]C02-1.5	1-Aug-01	130		20		
02-OS02-SS[LR-68-1275E-02]C02-1.5	1-Aug-01	29		22		
02-OS02-SS[LR-68-1350E-02]C02-1.5	1-Aug-01	40		9.1		
02-OS02-SS[LR-68-1575E-02]C02-1.5	1-Aug-01	67		21		
01-OS02-SS[LR-68-600E-TRANSECT]-C1-000	29-Aug-01	20	J	1700		
01-OS02-SS[LR-68-300W-TRANSECT]-C1-000	29-Aug-01	20	J	23		
01-OS02-SS-[LR-68-1500W-TRANSECT]-C1-000	29-Aug-01	10	J	22		
01-OS02-SS-[LR-68-3600W-TRANSECT]-C1-000	29-Aug-01	27	J	38		
02-OS02-[LR-68-600E-2-TRANSECT]-D1-000	12-Sep-01	33		2900		
02-OS02-[LR-68-600E-3-TRANSECT]-D1-000	12-Sep-01	22		360		
02-OS02-[LR-68-600E-4-TRANSECT]-D1-000	12-Sep-01	19		260		
02-OS02-[LR-68-600E-5-TRANSECT]-D1-000	12-Sep-01	16		430		
02-OS02-[LR-68-600E-6-TRANSECT]-D1-000	12-Sep-01	19		10		

J Estimated value, qualifier assigned during data validation.

Table A-8

Soil Analytical Results for Lead and Arsenic
Hot Spot Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg)		Lead (mg/kg)		Duplicate Sample ID
01-C004-SS[38-VS-150]C2-2.00	1-Aug-01	11		26		
01-C004-SS[38-VS-151]D1-000	1-Aug-01	23		31		
01-C004-SS[38-VS-152]D1-000	1-Aug-01	330		44		
01-C004-SS[38-VS-153]D1-000	1-Aug-01	8.1		13		
02-C013-SS[R71C85-02]C2-1.0	31-Jul-01	19		4		
02-C013-SS[R71C85-03]D1-000	31-Jul-01	46		90		
02-C013-SS[R71C85-04]D1-000	31-Jul-01	38		70		
02-C013-SS[R71C85-05]D1-000	31-Jul-01	49		80		
02-C013-SS[R71C85-06]D1-000	31-Jul-01	55		99		

Table A-9

Soil Analytical Results for Lead and Arsenic
Historical Areas Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg) *		Lead (mg/kg) *		Duplicate Sample ID
01-H404-SS[1]D1-005	3-Jul-01	14		37		
01-H404-SS[2]D1-005	3-Jul-01	24		450		
01-H404-SS[3]D1-005	3-Jul-01	17		88		
01-H404-SS[4]D1-005	3-Jul-01	60		46		
01-H404-SS[5]D1-005	3-Jul-01	13		160		
01-H404-SS[6]D1-005	3-Jul-01	21		790		
01-H404-SS[7]D1-005	3-Jul-01	8.1		18		
01-H404-SS[8]D1-005	3-Jul-01	13		170		
01-H404-SS[9]D1-005	3-Jul-01	150		280		
01-H404-SS[10]D1-005	3-Jul-01	7.5		22		
01-H404-SS[11]D1-005	3-Jul-01	6.1		33		01-H404-SS[12]D2-005
01-H404-SS[12]D2-005	3-Jul-01	6.2		29		
01-H404-ER[13]D3-000	3-Jul-01	0.01	U	0.01	U	
01-SM-SS-[R69C4]-D1-005	17-Sep-01	28		36		
01-SM-SS-[R68C4]-D1-005	17-Sep-01	62		83		
01-SM-SS-[R67C4]-D1-005	17-Sep-01	47		35		
01-SM-SS-[R67C3]-D1-005	17-Sep-01	52		150		
01-SM-SS-[R68C3]-D1-005	17-Sep-01	6		4.7		
01-SM-SS-[R68C2]-D1-005	17-Sep-01	73		280		
01-SM-SS-[R67C2]-D1-005	17-Sep-01	52		22		

* Reported as mg/kg unless otherwise specified

Rinsate blank sample. Results are reported as mg/L

U Analyte was analyzed for, but was not detected above the reporting limit shown.

Table A-10

Soil Analytical Results for Metals and Petroleum Hydrocarbons, mg/kg
Core Drilling Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action

Dupont, Washington

URS Project # 53-02000093.01

Sample ID	Wey-Geo-1		Wey-Geo-2	Wey-Geo-3	Wey-Geo-4	Wey-Geo-5
Sample Date	6/21/01		6/21/01	6/21/01	6/21/01	6/21/01
Arsenic	13		NA	NA	NA	NA
Aluminum	530		NA	NA	NA	NA
Antimony	9.3	U	NA	NA	NA	NA
Barium	5		NA	NA	NA	NA
Beryllium	0.37	U	NA	NA	NA	NA
Cadmium	0.93	U	NA	NA	NA	NA
Calcium	190	U	NA	NA	NA	NA
Chromium	2		NA	NA	NA	NA
Cobalt	0.93	U	NA	NA	NA	NA
Copper	8.3		NA	NA	NA	NA
Iron	2600		NA	NA	NA	NA
Lead	5.1		NA	NA	NA	NA
Magnesium	190	U	NA	NA	NA	NA
Manganese	4		NA	NA	NA	NA
Mercury	0.019	U	NA	NA	NA	NA
Nickel	1.9	U	NA	NA	NA	NA
Potassium	370	U	NA	NA	NA	NA
Selenium	9.3	U	NA	NA	NA	NA
Silver	1.9	U	NA	NA	NA	NA
Sodium	190	U	NA	NA	NA	NA
Thallium	3.7	U	NA	NA	NA	NA
Vanadium	1.2		NA	NA	NA	NA
Zinc	1.9	U	NA	NA	NA	NA
#2 Diesel	NA		32	U	28	U	18	J	31	U
Motor Oil	NA		64	U	57	U	61	U	61	U

U The analyte was analyzed for, but was not detected above the reporting limit shown.

J Estimated Value, qualifier assigned during data review

NA Not Analyzed

Table A-11

Soil Analytical Results for Lead and Arsenic

Topsoil Laydown Areas Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg)		Lead (mg/kg)		Duplicate Sample ID
01-TS03-SS-[R23C09]-D1-015	4-Sep-01	7		17		
01-TS03-SS-[R24C09]-D1-015	4-Sep-01	10		9.2		
01-TS03-SS-[R24C08]-D1-015	4-Sep-01	5.8		8.8		
01-TS03-SS-[R25C08]-D1-015	4-Sep-01	9.5		21		
01-TS03-SS-[R25C09]-D1-015	4-Sep-01	8.9		96		
01-TS03-SS-[R24C10]-D1-015	4-Sep-01	10		28		
01-TS03-SS-[R25C10]-D1-015	4-Sep-01	4.8		12		
01-TS04-SS[R35C16]-D1-015	4-Sep-01	8.1		15		
01-TS04-SS[R34C15]-D1-015	4-Sep-01	31		120		
01-TS04-SS[R35C14]-D1-015	4-Sep-01	33		19		
01-TS04-SS[R36C16]-D1-015	4-Sep-01	19		31		
01-TS04-SS[R35C15]-D1-015	4-Sep-01	10		9.5		
01-TS04-SS[R37C17]-D1-015	4-Sep-01	16		22		
02-TS04-SS-[R34C15-2]-D2-030	19-Sep-01	8.2		5.8		

Table A-12

Soil Analytical Results for Lead and Arsenic
Production Well Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	Arsenic (mg/kg)		Lead (mg/kg)		Duplicate Sample ID
01-C-SS[PW-1]C2-005	11-Jul-01	6.4		8.6		

Table A-13

Soil Analytical Results for Explosives

Hoffman Reservoir Sampling, May - September 2001

Weyerhaeuser-Dupont Interim Source Removal Action
Dupont, Washington
URS Project # 53-02000093.01

Sample ID	Date Sampled	2,4,6-Trinitrotoluene (mg/kg)	2,4-Dinitrotoluene (mg/kg)	2,6-Dinitrotoluene (mg/kg)	Field Duplicate Sample ID
HOFRES	7-May-01	0.05 U	0.05 U	0.05 U	

U - The analyte was analyzed for, but was not detected above the reporting limit shown.

Laboratory Analytical Data Validation Results

1 Summary

The soil sample analytical data reviewed from the Stockpile Interim Action Program are acceptable for use based on a majority of acceptable quality control data. The data meet criteria specified in the 1992 Hart Crowser Management Plan.[1] The data may be used to assess analyte concentrations with the stated qualifications.

2 Introduction

This section presents a quality control (QC) review of data generated from collection and analysis of soil stockpile samples from the former DuPont Works Site in Dupont, Washington, from March 19, 2001 through May 7, 2001. Samples were submitted to Sound Analytical Services, Inc. (SAS) located in Tacoma, Washington for analysis. This review includes evaluation of the following:

- Laboratory report and reporting of required analyses
- Chain of custody and holding times
- Method blanks
- Surrogate recoveries
- Matrix spike / blank spike (MS / BS)
- Laboratory duplicates
- Field duplicates
- Reporting limits

The data quality review was conducted using guidance from the following documents:

- Remedial Investigation/Feasibility Study, Former Dupont Works Site Management Plan, Hart Crowser, January 1992. (Management Plan)
- Work Plan, Interim Source Removal Actions: On-site Stockpiles, Pioneer Technologies Corporation, West Shore Corporation, NW, March 9, 2001.
- National Functional Guidelines for Inorganic Data Review, EPA, February 1994.
- National Functional Guidelines for Organic Data Review, EPA, February 1994.

Criteria used to assess the data are found in Section 5 of the Management Plan. The analytical data have been compared to criteria referenced in the Management Plan. The samples were analyzed for one or more of the following chemicals by the analytical methods shown.

• Metals (Arsenic and Lead)	EPA 6010
• Explosives (2,4-Dinitrotoluene, 2,6-Dinitrotoluene and 2,4,6-Trinitrotoluene)	EPA 8330
• Diesel range and motor oil range total petroleum hydrocarbons	NWTPH-Dx

[1] Hart Crowser. January 17, 1992. Management Plan. Remedial Investigation/Feasibility Study, Former DuPont Works Site, DuPont, WA.

3 Sample Case

The sample data groups (SDGs) identified in Table A-1 were included in this data review.

Table A-1 – Sample Data Groups Included in the Data Review

Sound Analytical Services Data Group Number	Date Sampled
96864	March 19, 2001
96890	March 20, 2001
96924	March 21, 2001
96959	March 22, 2001
97027	March 27, 2001
97185	April 3, 2001
97281	April 5, 2001
97962	May 7, 2001

.4 Laboratory Report and Reporting of Required Analyses

The laboratory reports included method blanks, surrogate recoveries, sample results, sample preparation logs, matrix spike results and matrix duplicate results. Blank spike data were reported only when matrix spike recovery data were outside of the control limits. Generally, the reports were adequate to evaluate the data quality given that blank spikes are not consistently reported. All sample analyses were reported as requested.

.5 Chain of Custody and Holding Times

Samples were maintained under chain of custody until arrival at the laboratory. Samples were submitted to the laboratory on the day of sample collection. All sample bottles were received in good condition. The samples were digested and analyzed within the method-required holding times. Holding times were within specifications of the Management Plan.

.6 Method and Field Blanks

Method blanks were used to determine if samples were contaminated through laboratory procedures or equipment. The laboratory method blanks were free of target analytes. The QC frequency requirement of one laboratory blank per analytical batch was met.

Field blanks (rinse blanks) were collected to assess potential cross-contamination in the field. Two rinse blanks were collected and analyzed for arsenic and lead. The field blanks were free of contamination. Data qualifiers were not assigned to associated data based on method or field blank results.

7 Surrogate Recoveries

Laboratory performance on individual samples was assessed by reviewing the recoveries of system monitoring compounds (surrogates).

Explosives by EPA 8330

Recoveries of the surrogate 3,4-dinitrotoluene were above the laboratory control limits of 63-119% due to sample matrix interference in seven samples in SDG 97281: (01-S648-SO- [DS-648-A-2]-C-000 (356%), 01-S648-SO- [DS-648-B-2]-C-000 (622%), 01-S648-SO- [DS-648-C-2]-C-000 (136%), 01-S648-SO-

[DS-648-D-2]-C-000 (175%), 01-S648-SO- [DS-648-F-2]-C-000 (646%), 01-S648-SO- [DS-648-G-2]-C-000 (265%) and 01-S648-SO- [DS-648-H-2]-C-000 (520%)) and in seven samples in SDG 97027: (01-C648-SO- [648-DS-A]-C1-000 (287%), 01-C648-SO-[648-DS-B]-C1-000 (243%), 01-C648-SO-[648-DS-C]-C1-000 (588%), 01-C648-SO-[648-DS-D]-C1-000 (193%), 01-C648-SO-[648-DS-E]-C1-000 (129%), 01-C648-SO-[648-DS-F]-C1-000 (124%) and 01-C648-SO-[648-DS-G]-C1-000 (130%)). Sample results for 2,4,6-trinitrotoluene (2,4,6-TNT), 2,4-dinitrotoluene (2,4-DNT), and 2,6-dinitrotoluene (2,6-DNT) reported above the reporting limits for these samples have been qualified as estimated and flagged "J". Sample results reported as not detected were not qualified based on surrogate recoveries.

8 Matrix Spikes/Blank Spikes

Matrix spike (MS) analyses were used to assess matrix effects with respect to the analytical data. The QC frequency requirement of one MS per analytical batch or one MS per 20 samples was met. In some cases, the MS was performed on samples unrelated to this site. Samples included in SAS sample delivery groups (SDGs) 97185 and 97962 and a subset of samples included in SDGs 96890 and 96924 are associated with MS analyses performed on samples unrelated to this site. Data qualifiers were not assigned to sample data based on MS recoveries from non-project samples. Blank spike (BS) analyses were used to assess the overall performance of the analytical system when matrix spike recoveries were not acceptable.

Arsenic and Lead by EPA 6010

The MS results were compared to the method control limits of 75 to 125%. For matrix spikes performed on site samples, spike recoveries ranged from 93 to 122 percent for arsenic and 4 to 106 percent for lead. The lead recovery (4%) for the MS performed on sample 01-C625-SO- [625-A-DS]-C6-000 (SDG 96864) was outside of the control limits due to high concentrations of lead in the parent sample. Per data validation guidelines, when the concentration of the analyte in the parent sample is greater than 4X the spike level, data are not qualified based on the matrix spike recovery. Data qualifiers were not assigned to associated data based on matrix spike results.

Based on review of the sample preparation log sheets, blank spikes were prepared at the appropriate frequency although the results were reported only when MS recoveries were outside of control limits. The blank spike recoveries provided were all within the control limits of 80 to 120%. Data provided included sets of blank spike/blank spike duplicates for lead associated with samples from SDG 96864 and one set for lead associated with samples from SDG 96924 where the MS was performed on a non-project sample. Data qualifiers were not assigned to associated samples based on blank spike/blank spike duplicate results.

Explosives by EPA 8330

The recoveries of 2,4,6-trinitrotoluene 2,4,6-TNT (72.8%) in the MS and 2,6-DNT (149%) in the MSD performed on sample 01-S648-SO- [DS-648-A-2]-C-000 (SDG 97281) were outside of the laboratory control limits of 73-108% for 2,4,6-TNT and 79-103% for 2,6-DNT. The relative percent differences (RPDs) for 2,4,6-TNT (36%) and 2,6-DNT (47%) were greater than the RPD control limits of 18% for 2,4,6-TNT and 10% for 2,6-DNT. The recoveries of 2,4,6-TNT in the MS (69.2%) and the MSD (72.3%) performed on sample 01-S648-SO- [648-DS-J]-C1-000 (SDG 97027) were outside the control limits of 73-108% for 2,4,6-TNT. Sample results for samples 01-S648-SO- [DS-648-A-2]-C-000 and 01-S648-SO- [648-DS-J]-C1-000 were previously qualified based on surrogate recovery.

Diesel Range and Motor Oil Range TPH by NWTPH-Dx

An MS/MSD was not performed on the sample submitted for diesel range and motor oil range TPH analysis. Data were assessed based on the BS/BSD results that were acceptable.

9 Laboratory Duplicates

Laboratory duplicate results were used to assess the precision of laboratory measurements. The laboratory duplicate results were compared to the project control limit for relative percent difference (RPD) of 35%. The QC frequency requirement of one duplicate per analytical batch or one duplicate per 20 samples was met. In some cases, the duplicate was performed on samples unrelated to this site. Samples included in SAS SDG 97185 and a subset of samples included in SDGs 96890, 96924 and 97962 are associated with duplicate analyses performed on samples unrelated to this site. Data qualifiers were not assigned to associated sample data based on duplicate results from non-project samples.

10 Field Duplicates

Field duplicate samples were used to assess sampling precision and representativeness. The QC frequency requirement of one field duplicate for 5 percent of the total samples collected was met for metals and explosives analyses. Eight sets of field duplicate samples (seven for metals analysis, one for explosives analysis) were collected. Table A-2 presents the RPDs of detected compounds that were calculated for the duplicate pairs. Because only one sample was analyzed for diesel-range and motor oil-range petroleum hydrocarbons, a field duplicate was not collected for this analysis.

Table A-2 – RPD of Detected Compounds

Sample ID	Duplicate ID	Analyte	Primary Result (mg/kg)	Duplicate Result (mg/kg)	RPD %
01-C620-SO-[620-DS-C]-C1-000	01-C620-SO-[620-DS-G]-C1-000	Arsenic	61	90	38
		Lead	430	420	2
01-C629-SO-[629-DS-E]-C1-000	01-C629-SO-[629-DS-F]-C1-000	Arsenic	230	260	12
		Lead	3,600	5,000	33
01-C530-SO-[530-DS-F]-C1-000	01-C530-SO-[530-DS-G]-C1-000	Arsenic	11	8.7	23
		Lead	96	150	44
01-C543-SO-[543-DS-H]-C1-000	01-C543-SO-[543-DS-I]-C1-000	Arsenic	5.4	7.5	33
		Lead	170	170	NC
01-C558-SO-[558-DS-E]-C1-000	01-C558-SO-[558-DS-F]-C1-000	Arsenic	4.6	4.3	7
		Lead	32	31	3.2
01-S536-SO-[536-DS-E]-C1-000	01-S536-SO-[536-DS-F]-C1-000	Arsenic	190	180	5.4
		Lead	1,500	1,800	18
01-C632-SO-[632-DS-C]-C1-000	01-C632-SO-[632-DS-D]-C1-000	Arsenic	19	15	24
		Lead	36	29	22
01-C648-SO-[648-DS-I]-C1-000	01-C648-SO-[648-DS-J]-C1-000	2,4,6-TNT	0.11	0.12	9
		2,4-DNT	0.16	0.098	48
		2,6-DNT	0.076	0.057	29

11 Reporting Limits

Reporting limits were reviewed to ensure that results reported meet project goals. The reporting limits are acceptable for the project needs. The data are summarized in Tables A-3, A-4, and A-5 for metals, explosives and petroleum hydrocarbons, respectively.

Table A-3
Soil Analytical Results for Arsenic and Lead
Stockpile Interim Action Program

Sample ID	Date Sampled	Arsenic (mg/kg)	Lead (mg/kg)	Field Duplicate Sample ID
01-C625-SO-[625-A-DS]-C6-000	19-Mar-01	160	1200	
01-C625-SO-[625-B-DS]-C6-000	19-Mar-01	78	1200	
01-C625-SO-[625-C-DS]-C6-000	19-Mar-01	48	300	
01-C650-SO-[650-A-DS]-C6-000	19-Mar-01	110	440	
01-C650-SO-[650-B-DS]-C6-000	19-Mar-01	66	950	
01-C621-SO-[621-A-DS]-C6-000	19-Mar-01	200	480	
01-C621-SO-[621-B-DS]-C6-000	19-Mar-01	510	270	
01-C624-SO-[624-A-DS]-C6-000	19-Mar-01	4.8	210	
01-C802-SO-[802-A-DS]-C6-000	19-Mar-01	42	600	
01-C510-SO-[510-A-DS]-C6-000	19-Mar-01	27	1900	
01-C510-SO-[510-B-DS]-C6-000	19-Mar-01	25	1100	
01-C803-SO-[803-A-DS]-C6-000	19-Mar-01	77	13	
01-C800-SO-[800-A-DS]-C6-000	19-Mar-01	140	1000	
01-C801-SO-[801-A-DS]-C6-000	19-Mar-01	83	940	
01-C620-SO-[620-DS-A]-C1-000	20-Mar-01	480	140	
01-C620-SO-[620-DS-B]-C1-000	20-Mar-01	78	620	
01-C620-SO-[620-DS-C]-C1-000	20-Mar-01	61	430	01-C620-SO-[620-DS-G]-C1-000
01-C620-SO-[620-DS-G]-C1-000	20-Mar-01	90	420	
01-C620-SO-[620-DS-D]-C1-000	20-Mar-01	81	270	
01-C620-SO-[620-DS-E]-C1-000	20-Mar-01	31	320	
01-C620-SO-[620-DS-F]-C1-000	20-Mar-01	61	360	
01-C629-SO-[629-DS-A]-C1-000	20-Mar-01	270	4100	
01-C629-SO-[629-DS-B]-C1-000	20-Mar-01	260	3800	
01-C629-SO-[629-DS-C]-C1-000	20-Mar-01	320	4500	
01-C629-SO-[629-DS-D]-C1-000	20-Mar-01	200	4600	
01-C629-SO-[629-DS-E]-C1-000	20-Mar-01	230	3600	01-C629-SO-[629-DS-F]-C1-000
01-C629-SO-[629-DS-F]-C1-000	20-Mar-01	260	5000	
01-C651-SO-[651-DS-A]-C1-000	20-Mar-01	3	12	
01-C804-SO-[804-DS-A]-C1-000	20-Mar-01	23	23	
01-C530-SO-[530-DS-A]-C1-000	20-Mar-01	7.3	270	
01-C530-SO-[530-DS-B]-C1-000	20-Mar-01	8.7	190	
01-C530-SO-[530-DS-C]-C1-000	20-Mar-01	11	100	
01-C530-SO-[530-DS-E]-C1-000	20-Mar-01	12	100	
01-C530-SO-[530-DS-D]-C1-000	20-Mar-01	6.1	68	
01-C530-SO-[530-DS-F]-C1-000	20-Mar-01	11	96	01-C530-SO-[530-DS-G]-C1-000
01-C530-SO-[530-DS-G]-C1-000	20-Mar-01	8.7	150	
01-C543-SO-[543-DS-A]-C1-000	21-Mar-01	6.2	180	
01-C543-SO-[543-DS-B]-C1-000	21-Mar-01	5.4	220	
01-C543-SO-[543-DS-C]-C1-000	21-Mar-01	6.3	850	
01-C543-SO-[543-DS-D]-C1-000	21-Mar-01	7.6	160	
01-C543-SO-[543-DS-E]-C1-000	21-Mar-01	5	220	
01-C543-SO-[543-DS-F]-C1-000	21-Mar-01	5.7	170	
01-C543-SO-[543-DS-G]-C1-000	21-Mar-01	4.8	160	
01-C543-SO-[543-DS-H]-C1-000	21-Mar-01	5.4	170	01-C543-SO-[543-DS-I]-C1-000
01-C543-SO-[543-DS-I]-C1-000	21-Mar-01	7.5	170	
01-C545-SO-[545-DS-A]-C1-000	21-Mar-01	5.8	250	
01-C556-SO-[556-DS-A]-C1-000	21-Mar-01	7.8	160	
01-C556-SO-[556-DS-B]-C1-000	21-Mar-01	5.5	140	
01-C555-SO-[555-DS-A]-C1-000	21-Mar-01	3.9	190	
01-C555-SO-[555-DS-B]-C1-000	21-Mar-01	5.3	350	
01-C558-SO-[558-DS-A]-C1-000	21-Mar-01	3.9	37	
01-C558-SO-[558-DS-B]-C1-000	21-Mar-01	6	89	
01-C558-SO-[558-DS-C]-C1-000	21-Mar-01	4.9	35	

Table A-3
Soil Analytical Results for Arsenic and Lead
Stockpile Interim Action Program

Sample ID	Date Sampled	Arsenic (mg/kg)	Lead (mg/kg)	Field Duplicate Sample ID
01-C558-SO-[558-DS-D]-C1-000	21-Mar-01	6	39	
01-C558-SO-[558-DS-E]-C1-000	21-Mar-01	4.6	32	01-C558-SO-[558-DS-F]-C1-000
01-C558-SO-[558-DS-F]-C1-000	21-Mar-01	4.3	31	
01-C544-SO-[544-DS-A]-C1-000	21-Mar-01	3.7	390	
01-C544-SO-[544-DS-B]-C1-000	21-Mar-01	4.1	460	
01-C544-SO-[544-DS-C]-C1-000	21-Mar-01	2.8	320	
01-C544-SO-[544-DS-D]-C1-000	21-Mar-01	4.1	350	
01-C552-SO-[552-DS-A]-C1-000	22-Mar-01	7.9	550	
01-C631-SO-[631-DS-A]-C1-000	22-Mar-01	18	46	
01-C631-SO-[631-DS-B]-C1-000	22-Mar-01	16	46	
01-C631-CO-[631-DS-C]-C1-000	22-Mar-01	12	38	
01-C631-SO-[631-DS-D]-C1-000	22-Mar-01	14	56	
01-C631-SO-[631-DS-E]-C1-000	22-Mar-01	12	44	
01-C631-SO-[631-DS-F]-C1-000	22-Mar-01	23	100	
01-C631-SO-[631-DS-G]-C1-000	22-Mar-01	17	140	
01-C632-SO-[632-DS-A]-C1-000	22-Mar-01	25	33	
01-C632-SO-[632-DS-B]-C1-000	22-Mar-01	11	23	
01-C632-SO-[632-DS-C]-C1-000	22-Mar-01	19	36	01-C632-SO-[632-DS-D]-C1-000
01-C632-SO-[632-DS-D]-C1-000	22-Mar-01	15	29	
01-C805-SO-[805-DS-A]-C1-000	22-Mar-01	20	45	
01-C806-SO-[806-DS-A]-C1-000	22-Mar-01	7.9	15	
01-C647-SO-[647-DS-A]-C1-000	22-Mar-01	34	300	
01-C647-SO-[647-DS-B]-C1-000	22-Mar-01	34	200	
01-C647-SO-[647-DS-C]-C1-000	22-Mar-01	27	100	
01-C647-SO-[647-DS-D]-C1-000	22-Mar-01	17	81	
01-C645-SO-[645-DS-A]-C1-000	22-Mar-01	22	100	
01-C645-SO-[645-DS-B]-C1-000	22-Mar-01	22	91	
01-S536-SO-[536-DS-A]-C1-000	3-Apr-01	240	3100	
01-S536-SO-[536-DS-B]-C1-000	3-Apr-01	37	1700	
01-S536-SO-[536-DS-C]-C1-000	3-Apr-01	300	1900	
01-S536-SO-[536-DS-D]-C1-000	3-Apr-01	68	1400	
01-S536-SO-[536-DS-E]-C1-000	3-Apr-01	190	1500	01-S536-SO-[536-DS-F]-C1-000
01-S536-SO-[536-DS-F]-C1-000	3-Apr-01	180	1800	
R62C73	7-May-01	31	43	

J - Estimated Value, Qualifier assigned during data review

Note: Two rinsate blanks were collected on March 19, 2001 (RIN-031901) and April 3, 2001 (RIN-040301).
Arsenic and lead were not detected in either rinsate blank and results were reported as not detected for both elements (< 0.01 mg/L).

Table A-4
Soil Analytical Results for Explosives
Stockpile Interim Action Program

Sample ID	Date Sampled	2,4,6-Trinitrotoluene (mg/kg)	2,4-Dinitrotoluene (mg/kg)	2,6-Dinitrotoluene (mg/kg)	Field Duplicate Sample ID
01-C648-SO-[648-DS-A]-C1-000	27-Mar-01	0.54 J	1.1 J	2.2 J	
01-C648-SO-[648-DS-B]-C1-000	27-Mar-01	0.42 J	0.76 J	0.047 U	
01-C648-SO-[648-DS-C]-C1-000	27-Mar-01	0.7 J	0.48 J	52 J	
01-C648-SO-[648-DS-D]-C1-000	27-Mar-01	0.34 J	0.16 J	0.046 U	
01-C648-SO-[648-DS-E]-C1-000	27-Mar-01	0.29 J	0.37 J	0.14 J	
01-C648-SO-[648-DS-F]-C1-000	27-Mar-01	0.17 J	2.6 J	0.047 U	
01-C648-SO-[648-DS-G]-C1-000	27-Mar-01	0.19 J	0.29 J	0.095 J	
01-C648-SO-[648-DS-H]-C1-000	27-Mar-01	0.067	0.068	0.047 U	
01-C648-SO-[648-DS-I]-C1-000	27-Mar-01	0.11	0.16	0.076	01-C648-SO-[648-DS-J]-C1-000
01-C648-SO-[648-DS-J]-C1-000	27-Mar-01	0.12	0.098	0.057	
01-S648-SO-[DS-648-A-2]-C-000	5-Apr-01	0.9 J	0.13 J	0.4 J	
01-S648-SO-[DS-648-B-2]-C-000	5-Apr-01	9 J	2.7 J	2.2 J	
01-S648-SO-[DS-648-C-2]-C-000	5-Apr-01	0.38 J	0.093 J	0.074 J	
01-S648-SO-[DS-648-D-2]-C-000	5-Apr-01	0.48 J	10 J	0.047 U	
01-S648-SO-[DS-648-E-2]-C-000	5-Apr-01	0.078	0.14	0.11	
01-S648-SO-[DS-648-F-2]-C-000	5-Apr-01	1.3 J	0.21 J	1.1 J	
01-S648-SO-[DS-648-G-2]-C-000	5-Apr-01	0.57 J	0.23 J	0.45 J	
01-S648-SO-[DS-648-H-2]-C-000	5-Apr-01	3 J	0.65 J	1.4 J	
01-S648-SO-[DS-648-I-2]-C-000	5-Apr-01	0.097	0.11	0.071	
01-S648-SO-[DS-648-J-2]-C-000	5-Apr-01	0.12	0.13	0.075	
HOFRES	7-May-01	0.05 U	0.05 U	0.05 U	

J - Estimated Value, qualifier assigned during data review

U - The analyte was analyzed for, but was not detected above the reporting limit shown.

Table A-5
Soil Analytical Results for Petroleum Hydrocarbons
Stockpile Interim Action Program

Sample ID	Date Sampled	Total Petroleum Hydrocarbons	
		Diesel-range (mg/kg)	Motor Oil-range (mg/kg)
807	7-May-01	260*	250**

* The chromatogram suggests this may be aged or degraded diesel.

** The chromatogram does not match a typical motor oil pattern.

Laboratory Analytical Data Validation Results

1 Summary

The soil analytical data reviewed from the background samples are acceptable for use based on a majority of acceptable quality control data. The data meet criteria specified in the 1992 Hart Crowser Management Plan.[1] The data may be used to assess analyte concentrations with the stated qualifications.

2 Introduction

This section presents a quality control (QC) review of data generated from collection and analysis of soil samples from the former DuPont Works Site in Dupont, Washington, from January 29 through April 3, 2001. Samples were submitted to Sound Analytical Services, Inc. for analysis. This review includes evaluation of the following:

- Laboratory report and reporting of required analyses
- Chain of custody and holding times
- Method blanks
- Matrix spike / blank spikes (MS / BS)
- Laboratory duplicates
- Field duplicates
- Reporting limits

The data quality review was conducted using guidance from the following documents:

- National Functional Guidelines for Organic Data Review, EPA, February 1994.
- Remedial Investigation/Feasibility Study, Former Dupont Works Site Management Plan, Hart Crowser, January 1992.

Criteria used to assess the data are found in Section 5 of the Management Plan. The analytical data has been compared to the Management Plan limits. The samples were analyzed for the following chemicals, using the noted analytical methods.

- Arsenic EPA 6010
- Lead EPA 6010

3 Sample Case

The sample data groups identified in Table A-1 were included in this data review.

Table A-1 – Sample Data Groups Included in the Data Review

Sound Analytical Services Data Group Number	Date Sampled
95757	1/29/2001
95881	1/30, 1/31, and 2/1/2001
95897	2/2/2001

[1] Hart Crowser. January 17, 1992. Management Plan. Remedial Investigation/Feasibility Study, Former DuPont Works Site, DuPont, WA.

Table A-1 – Sample Data Groups Included in the Data Review

95980	2/5/2001
96014	2/7/2001
96084	2/8 – 2/9/2001
96171	2/12 – 2/14/2001
96257	2/14 – 2/15/2001
96322	2/20 – 2/21/2001
96362	2/22 – 2/23/2001
97186	4/3/2001
97187	4/3/2001

.4 Laboratory Report and Reporting of Required Analyses

The laboratory report was complete; all QC results were included. The project scope of work stated that URS Inc., (URS) would provide industry-accepted evaluation of data quality and documentation of sample acquisition and custody. The reports provide all necessary information to complete this review. All analytical methods were reported as requested.

5 Chain of Custody and Holding Times

Samples were maintained under chain of custody until arrival at the laboratory. Samples were preserved and cooled until arrival at the laboratory. Sample bottles were in good condition. The samples were extracted and analyzed within the 6 month holding time. Holding times were within specifications of the Management Plan.

.6 Method and Field Blanks

Method blanks were used to determine if samples were contaminated through laboratory procedures or equipment. The laboratory method blanks were free of target analytes. The QC frequency requirement of one laboratory blank per analytical batch was met. One rinse blank was collected. The field rinse blank was free of contamination. No data require qualification based on field rinse blank contamination.

7 Matrix Spikes/Blank Spikes

Matrix spike (MS) analyses were used to assess matrix effects with respect to the analytical data. The QC frequency requirement of one MS and one blank spike (BS) per analytical batch or one MS and one BS per 20 samples, was met. In instances where the concentration of the sample is at least 4 times greater than the spike added, the MS percent recoveries are not used to validate the associated sample data. The laboratory included BS reports only if the MS data were non-compliant.

The MS results were compared to evaluate the accuracy of laboratory procedures. The spike recoveries ranged from 81 to 107 percent and were within the laboratory-established control limits of 75-125, with the exception listed below. One blank spike was reported and was within the laboratory-established control limits of 80-120.

- MS 95881-01 (2/9/01): the lead percent recovery was below the control limit at 69%. Associated sample lead results were qualified as estimated and flagged with a "J".

8 Laboratory Duplicates

The relative percent differences (RPDs) ranged from 0 to 29 percent and were within the laboratory-established control limits of 35%, with two exceptions. The lead RPD for laboratory duplicate 96322-61 (3/5/01) was above the control limit at 39% due to matrix interference. Associated sample lead results

were qualified as estimated and were flagged with a "J". The arsenic and lead RPDs for laboratory duplicate 95881-61 (2/13/01) were greater than the control limit at 45%. Associated sample arsenic and lead results were qualified as estimated and flagged with a "J".

9 Field Duplicates

Field duplicate samples were used to assess sampling precision and representativeness. The QC frequency requirement of one field duplicate for 5 percent of the total samples, or one field duplicate per day at a minimum, specified in the Management Plan, was met. Twenty-seven sets of field duplicate samples were collected. Table A-2 presents the RPD of detected compounds that were calculated for the duplicate pairs. The RPD is calculated only for sample results that are 5 times greater than the detection limit. The RPDs were acceptable (i.e., less than 35%) with the exception of twelve duplicate pairs with RPD greater than 35%. Arsenic and lead results for the sample and duplicate pairs were qualified as estimated and flagged with a "J" if the RPD was greater than 35%. The average RPD for all field duplicates collected was 30%, which is acceptable for this project.

Table A-2 – RPD of Detected Compounds

Sample ID & Duplicate ID	Analyte	Primary Result (mg/kg)	Duplicate Result (mg/kg)	RPD %
R74C67/R74C66	Arsenic	47	20	**81**
	Lead	120	56	**73**
R74C69/R74C65	Arsenic	66	43	**42**
	Lead	130	120	8
R79C74/R79C66	Arsenic	160	350	**75**
	Lead	39	54	32
R77C73/R77C66	Arsenic	25	31	21
	Lead	25	35	33
R72C74/R72C66	Arsenic	39	51	27
	Lead	46	79	**53**
R72C71/R72C65	Arsenic	51	62	19
	Lead	120	140	15
R63C74/R63C66	Arsenic	64	56	13
	Lead	57	84	**38**
R61C68/R61C66	Arsenic	42	48	13
	Lead	110	120	9
R69C72/R69C66	Arsenic	66	52	24
	Lead	85	49	**54**
R62C76/R60C76	Arsenic	19	30	**45**
	Lead	64	88	32
R65C81/R60C81	Arsenic	4.7	9.3	NC
	Lead	10	19	**62**
R73C83/R74C83	Arsenic	21	29	32
	Lead	33	40	19
R72C84/R73C84	Arsenic	4	4.6	NC
	Lead	7.8	11	NC
R63C86/R62C86	Arsenic	22	26	17
	Lead	46	50	8
R64C87/R63C87	Arsenic	9.9	13	27
	Lead	20	19	5
R68C88/R69C88	Arsenic	27	31	14
	Lead	37	39	5

Table A-2 – RPD of Detected Compounds

Sample ID & Duplicate ID	Analyte	Primary Result (mg/kg)	Duplicate Result (mg/kg)	RPD %
R47C66/R49C66	Arsenic	58	69	17
	Lead	96	81	17
R31C55/R31C54	Arsenic	17	16	6
	Lead	38	43	12
R30C55/R30C54	Arsenic	24	32	29
	Lead	53	79	**39**
R29C55/R29C54	Arsenic	12	12	0
	Lead	11	25	**78**
R29C61/R25C61	Arsenic	25	20	22
	Lead	41	37	10
R42C64/R44C64	Arsenic	7.7	10	NC
	Lead	8.9	13	NC
R37C62/R40C62	Arsenic	42	37	13
	Lead	30	29	3
R37C63/R42C63	Arsenic	31	46	**39**
	Lead	19	23	19
R22C56/R22C54	Arsenic	29	17	**52**
	Lead	31	21	**38**
R66C89/R66C90	Arsenic	10	14	**33**
	Lead	27	27	**0**
R65C89/R65C90	Arsenic	22	20	**10**
	Lead	40	37	**8**

10 Reporting Limits

To ensure the level of analytical reporting sensitivity meets project goals, reporting limits were reviewed. The reporting limits are acceptable for the project needs. No data require qualification based on reporting limits.

Laboratory Analytical Data Validation Results

1 Summary

The soil analytical data reviewed from the Sequalitchew Creek Canyon NGRR are acceptable for use based on a majority of acceptable quality control data. The data meet criteria specified in the 1992 Hart Crowser Management Plan.[1] The data may be used to assess analyte concentrations with the stated qualifications.

2 Introduction

This section presents a quality control (QC) review of data generated from collection and analysis of soil samples from the former DuPont Works Site in Dupont, Washington, from January 10, through 16, 2001. Samples were submitted to Sound Analytical Services, Inc. for analysis. This review includes evaluation of the following:

- Laboratory report and reporting of required analyses
- Chain of custody and holding times
- Method blanks
- Matrix spike / blank spikes (MS / BS)
- Laboratory duplicates
- Field duplicates
- Reporting limits

The data quality review was conducted using guidance from the following documents:

- National Functional Guidelines for Organic Data Review, EPA, February 1994.
- Remedial Investigation/Feasibility Study, Former Dupont Works Site Management Plan, Hart Crowser, January 1992.

Criteria used to assess the data are found in Section 5 of the Management Plan. The analytical data has been compared to the Management Plan limits. The samples were analyzed for the following chemicals, using the noted analytical methods.

- Arsenic EPA 6010
- Lead EPA 6010

3 Sample Case

The sample data groups identified in Table A-1 were included in this data review.

Table A-1 – Sample Data Groups Included in the Data Review

Sound Analytical Services Data Group Number	Date Sampled	Sample ID
95386	11 Jan 01	01-OS02-SS-[LR-68-525W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-600W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-675W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-750W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-825W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-900W]-C1-000

[1] Hart Crowser. January 17, 1992. Management Plan. Remedial Investigation/Feasibility Study, Former DuPont Works Site, DuPont, WA.

Table A-1 – Sample Data Groups Included in the Data Review

Sound Analytical Services Data Group Number	Date Sampled	Sample ID
95386	11 Jan 01	01-OS02-SS-[LR-68-975W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-1050W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-1125W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-1200W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-1275W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-1350W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-1425W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-1500W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-1575W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-1600W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-1650W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-1725W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-1800W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-1875W]-C1-000
95386	11 Jan 01	01-OS02-SS-[LR-68-1950W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-0]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-2025W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-2100W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-2175W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-2250W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-2325W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-2400W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-2475W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-2550W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-2600W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-2625W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-2700W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-2775W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-2850W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-2925W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-3000W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-3075W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-3150W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-3225W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-3300W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-3375W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-3450W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-3525W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-3600W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-3675W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-3750W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-3825W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-3900W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-3975W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-4025W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-4050W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-4125W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-4175W]-C1-000

Table A-1 – Sample Data Groups Included in the Data Review

Sound Analytical Services Data Group Number	Date Sampled	Sample ID
95438	12 Jan 01	01-OS02-SS-[LR-68-4200W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-4275W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-4325W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-4350W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-4425W]-C1-000
95438	12 Jan 01	01-OS02-SS-[LR-68-4475W]-C1-000

4 Laboratory Report and Reporting of Required Analyses

The laboratory report was complete; all QC results were included. The project scope of work stated that URS Inc., (URS) would provide industry-accepted evaluation of data quality and documentation of sample acquisition and custody. The reports provide all necessary information to complete this review. All analytical methods were reported as requested.

5 Chain of Custody and Holding Times

Samples were maintained under chain of custody until arrival at the laboratory. Samples were preserved and cooled until arrival at the laboratory. Sample bottles were in good condition. The samples were extracted and analyzed within the 6 month holding time. Holding times were within specifications of the Management Plan.

6 Method and Field Blanks

Method blanks were used to determine if samples were contaminated through laboratory procedures or equipment. The laboratory method blanks were free of target analytes. The QC frequency requirement of one laboratory blank per analytical batch was met. Three rinse blanks were analyzed. The field rinse blanks were free of contamination. No data require qualification based on field rinse blank contamination.

7 Matrix Spikes/Blank Spikes

Matrix spike (MS) analyses were used to assess matrix effects with respect to the analytical data. The QC frequency requirement of one MS and one blank spike (BS) per analytical batch or one MS and one BS per 20 samples, was met. In instances where the concentration of the sample is at least 4 times greater than the spike added, the MS percent recoveries are not used to validate the associated sample data. The laboratory included BS reports only if the MS data were non-compliant.

The MS results were compared to evaluate the accuracy of laboratory procedures. The spike recoveries ranged from 88 to 117 percent and were within the laboratory-established control limits of 75-125 with the exceptions listed below. One blank spike was reported and was within the laboratory-established control limits of 80-120. No data require qualification based on MS or BS percent recoveries because the concentration of the spiked sample (matrix spike 95344-20, 1/18/01) was at least 4 times greater than the spike added.

8 Laboratory Duplicates

The relative percent differences (RPDs) ranged from 0 to 26 percent and were within the laboratory-established control limits of less than 35%, with one exception. The lead RPD for laboratory duplicate 95344-20 (1/17/01) was above the control limit at 78% due to matrix interference. Associated sample lead results were qualified as estimated and were qualified with a "J".

9 Field Duplicates

Field duplicate samples were used to assess sampling precision and representativeness. The QC frequency requirement of one field duplicate for 5 percent of the total samples, or one field duplicate per day at a minimum, specified in the Management Plan, was met. Seven sets of field duplicate samples were collected. Table A-2 presents the RPD of detected compounds that were calculated for the duplicate pairs. The RPDs were acceptable (i.e., less than 35%) with the exception of two duplicate pairs LR-68-1575W/1600W and LR-68-4425/4475. The arsenic results for LR-68-1575W and the lead results for LR-68-4425 were qualified as estimated and flagged with a "J" due to the high duplicate RPD.

Table A-2 – RPD of Detected Compounds

Sample ID & Duplicate ID	Analyte	Primary Result (mg/kg)	Duplicate Result (mg/kg)	RPD %
LR-68-1575W/LR-68-1600W	Arsenic	180	120	**40**
	Lead	21	17	21
LR-68-3975W/LR-68-4025W	Arsenic	420	380	10
	Lead	28	26	7
LR-68-4125W/LR-68-4175W	Arsenic	350	270	26
	Lead	37	33	11
LR-68-4275W/LR-68-4325W	Arsenic	420	430	2
	Lead	55	60	9
LR-68-4425W/LR-68-4475W	Arsenic	290	370	24
	Lead	39	190	**132**
LR-68-2550W/LR-68-2600W	Arsenic	340	270	23
	Lead	33	26	24

10 Reporting Limits

To ensure the level of analytical reporting sensitivity meets project goals, reporting limits were reviewed. The reporting limits are acceptable for the project needs. No data require qualification based on reporting limits.

Summary

The data reviewed are acceptable for use based on a majority of acceptable quality control data. The data meet criteria specified in the 1992 Hart Crowser Management Plan. The data may be used to assess analyte concentrations with the stated qualifications.

Introduction

This section presents a quality control (QC) review of data generated from collection and analysis of soil samples from the Weyerhaeuser-Dupont site in Dupont, Washington, from September 10, 1999 through July 17, 2000. Samples were submitted to Sound Analytical Services, Inc. for analysis. This review includes evaluation of the following:

- Laboratory report and reporting of required analyses
- Chain of custody and holding times
- Method blanks
- Matrix spike / blank spikes (MS / BS)
- Laboratory duplicates
- Field duplicates
- Reporting limits

The data quality review was conducted using guidance from the following documents:

- National Functional Guidelines for Organic Data Review, EPA, February 1994.
- Remedial Investigation/Feasibility Study, Former Dupont Works Site Management Plan, Hart Crowser, January 1992.

Criteria used to assess the data are found in Section 5 of the Management Plan. The analytical data has been compared to the Management Plan limits.

The samples were analyzed for the following chemicals and chemical groups.

Arsenic	EPA 6010
Lead	EPA 6010

Sample Case

The following sample data groups were included in this review.

SOUND ANALYTICAL SERVICES DATA GROUP NUMBER	DATE SAMPLED
84030	10 Sep 99
84055	13 Sep 99
84078	14 Sep 99
84117	15 Sep 99
84151	16 Sep 99
84215	20 Sep 99
84245	21 Sep 99
84297	22 Sep 99
84320	23 Sep 99
84401	27 Sep 99
84426	28 Sep 99
84479	29 Sep 99
84508	30 Sep 99
84520	1 Oct 99
84678	7 Oct 99
84745	11 Oct 99
84778	12 Oct 99
84800	13 Oct 99
84832	14 Oct 99
84863	15 Oct 99
84898	18 Oct 99
84932	19 Oct 99
84973	21 Oct 99
85323	4 Nov 99
86405	3 Jan 2000
87040	25 Jan 2000
87119	28 Jan 2000
87987	7 Mar 2000
89042	18 Apr 2000
89069	19 Apr 2000
89529	9 May 2000
89746	17 May 2000
89910	30 May 2000
90806	29 June 2000
91163	18 July 2000
91278	24 July 2000

Laboratory Report and Reporting of Required Analyses

The laboratory report was complete; all QC results were included. The project scope of work stated that URSGWC would provide industry-accepted evaluation of data quality and documentation of sample acquisition and custody. The reports provide all necessary information to complete this review.

Chain of Custody and Holding Times

Samples were maintained under chain of custody until arrival at the laboratory. Samples were preserved and cooled. Sample jars were in good condition.

The samples were extracted and analyzed within the 6 month holding time. No data require qualification based on missed holding times.

Method and Field Blanks

Method blanks were used to determine if samples were contaminated through laboratory procedures or equipment. The laboratory method blanks were free of target analytes. The QC frequency requirement of one laboratory blank per analytical batch was met. Field blanks were used to determine if samples were contaminated through sampling procedures or equipment. The rinse blanks had detections of lead or arsenic. No data require qualification based on these results.

SAMPLE ID	BATCH	ANALYTE	RESULT (mg/L)
Rinse Blank (rinsate)	84078	Lead	0.0032
Rinse Blank (rinsate 2)	84117	Lead	0.026
Rinse Blank (rinsate 3)	84117	Lead	0.016
Rinse Blank (rinsate 4)	84151	Lead	0.088
Rinse Blank (rinsate 5)	84215	Lead	0.031
Rinse Blank (rinsate 6)	84245	Arsenic Lead	0.034 0.026
Rinse Blank (rinsate 7)	84297	Lead	0.0061
Rinse Blank (rinsate 8)	84401	Lead	0.0065

Matrix Spikes / Blank Spikes

Matrix spike analyses were used to assess matrix effects with respect to the analytical data. Blank spike analyses were used to monitor the overall performance of the analysis, including sample preparation. The QC frequency requirement of one matrix spike and one blank spike per analytical batch or one matrix spike and one blank spike per 20 samples, was met.

The spike recoveries ranged from were within the control limits, with the following exceptions.

- Matrix spike 84055-1 (9-15/99): The lead percent recovery was above the control limits. The concentration of the spiked sample was at least 10 times greater than the spike added; therefore, no data were qualified.
- Matrix spike 84055-21 (9-15/99): The lead percent recovery was above the control limits. The concentration of the spiked sample was at least 10 times greater than the spike added; therefore, no data were qualified.

- Matrix spike 84078-42 (9/20/99): The lead matrix spike was not recovered. The concentration of the spiked sample was at least 10 times greater than the spike added; therefore, no data were qualified.
- Matrix spike 84117-1 (9/17/99): The lead matrix spike was not recovered. The concentration of the spiked sample was at least 10 times greater than the spike added; therefore, no data were qualified.
- Matrix spike 84117-21 (9/20/99): The lead matrix spike was not recovered. The concentration of the spiked sample was at least 10 times greater than the spike added; therefore, no data were qualified.
- Matrix spike 84151-1 (9/20/99): The arsenic percent recovery was below the control limits at 74%. The associated blank spike was within the control limits; therefore, no data were qualified.
- Matrix spike 84215-2 (9/22/99): The lead percent recovery was above the control limits. The concentration of the spiked sample was at least 10 times greater than the spike added; therefore, no data were qualified.
- Matrix spike 84215-22 (9/22/99): The lead percent recovery was below the control limits at 74%. The associated blank spike was within the control limits; therefore, no data were qualified.
- Matrix spike 84245-2 (9/21/99): The lead percent recovery was below the control limits at 64%. The associated blank spike was within the control limits; therefore, no data were qualified.
- Matrix spike 84245-40 (9/23/99): The percent recoveries were below the control limits for arsenic at 74% and lead at 72%. The associated blank spike percent recoveries were within the control limits; therefore, no data were qualified.
- Matrix spike 84297-22 (9/27/99): The percent recoveries were below the control limits for arsenic at 73% and lead at 72%. Associated quality control data were within the control limits; therefore, no data were qualified.
- Matrix spike 84297-42 (9/27/99): The percent recoveries were below the control limits for arsenic at 71% and lead at 69%. Associated quality control data were within the control limits; therefore, no data were qualified.
- Matrix spike 84320-1 (9/28/99): The percent recoveries were below the control limits for arsenic at 71% and lead at 66%. Associated quality control data were within the control limits; therefore, no data were qualified.
- Matrix spike 84320-21 (9/28/99): The percent recovery was above the control limit for lead at 133%. Associated quality control data were within the control limits; therefore, no data were qualified.
- Matrix spike 59069-21 (4/21/00): The arsenic and lead matrix spike percent recoveries were not recovered. The associated LCS and an additional matrix spike percent recoveries were within the control limits; therefore, no data were qualified.

- Blank spike S382 (9/20/99): The lead percent recovery was greater than the control limits at 133%. Associated data were qualified as estimated (J).
- Blank spike S392 (9/17/99): The lead percent recovery was greater than the control limits at 130%. Associated data were qualified as estimated (J).

Laboratory Duplicates

The laboratory duplicate relative percent differences (RPDs) were within the control limits, with the following exceptions.

- Laboratory duplicate 84030-15 (9/14/99): The lead RPD was above the control limit at 49% due to matrix interference. Associated quality control data were within the control limits; therefore, no data were qualified.
- Laboratory duplicate 84078-42 (9/20/99): The lead RPD was above the control limit at 58% due to matrix interference. Associated quality control data were within the control limits; therefore, no data were qualified.
- Laboratory duplicate 84508-21 (10/4/99): The arsenic RPD was above the control limit at 200%. The sample and duplicate results were not greater than five times the reporting limit; therefore, no data were qualified.
- Laboratory duplicate 85323-41 (11/5/99): The lead RPD was above the control limit at 46% due to matrix interference. Associated quality control data were within the control limits; therefore, no data were qualified.
- Laboratory duplicate 87040-41 (1/27/00): The arsenic RPD was above the control limit at 50% due to matrix interference. Associated quality control data were within the control limits; therefore, no data were qualified.

Field Duplicates

Field duplicate samples were used to assess sampling precision and representativeness. The RPD was calculated only for sample results greater than 5 times the reporting limit. A total of 42 duplicate pairs were collected which meets the QC frequency requirement of one field duplicate for 5 percent of the total samples or one field duplicate for each day of sampling, specified in the Management Plan. The duplicate pairs show good agreement, with the following exceptions:

- Duplicate pair 38-VS-96/117: the arsenic and lead results were qualified as estimated (J) due to the high duplicate RPDs.
- Duplicate pair 31-VS-586/587: the arsenic and lead results were qualified as estimated (J) due to the high duplicate RPDs.
- Duplicate pair 31-VS-639/686: the arsenic and lead results were qualified as estimated (J) due to the high duplicate RPDs.

SAMPLE ID & DUPLICATE ID	ANALYTE	PRIMARY RESULT (ug/L)	DUPLICATE RESULT (ug/L)	RPD %
31-VS-68/31-VS-83	arsenic	12	15	22
	lead	1000	1100	10
31-VS-74/31-VS-84	arsenic	15	13	14
	lead	4300	3500	21
31-VS-80/31-VS-85	arsenic	35	32	9
	lead	4200	4000	5
31-VS-137/31-VS-162	arsenic	35	26	30
	lead	2500	2100	17
31-VS-135/31-VS-163	arsenic	7.7	7.5	3
	lead	170	170	0
31-VS-171/31-VS-175	arsenic	6.1	6.9	12
	lead	260	280	7
31-VS-196/31-VS-216	--	--	--	--
31-VS-503/31-VS-504	lead	13	25	63
31-VS-518/31-VS-519	--	--	--	--
31-VS-526/31-VS-527	arsenic	15	15	0
31-VS-540/31-VS-541	--	--	--	--
31-VS-560/31-VS-561	arsenic	130	92	34
	lead	7700	4400	55
31-VS-570/31-VS-570	arsenic	11	9.7	13
	lead	26	20	26
31-VS-577/31-VS-578	arsenic	8.2	13	45
	lead	19	32	51
31-VS-586/31-VS-587	arsenic	120	30	**120**
	lead	74	47	**45**
31-VS-597/31-VS-598	arsenic	12	16	29
	lead	39	62	51
31-VS-615/31-VS-627	arsenic	11	10	10
	lead	13	13	0
31-VS-619/31-VS-628	arsenic	11	11	0
	lead	11	13	17
31-VS-624/31-VS-629	--	--	--	--
31-VS-639/31-VS-686	arsenic	45	17	**90**
	lead	130	41	**104**
31-VS-649/31-VS-687	arsenic	55	60	9
	lead	52	52	0
31-VS-659/31-VS-688	lead	11	7.6	37
31-VS-669-/31-VS-689	arsenic	11	5.9	60
31-VS-679/31-VS-690	--	--	--	--
31-VS-713/31-VS-725	--	--	--	--
31-VS-724/31-VS-726	arsenic	12	14	15
	lead	21	25	17
19-VS-37/19-VS-44	lead	23	25	8
19-VS-30/19-VS-45	lead	20	17	16
19-VS-42/19-VS-46	arsenic	56	82	38
	lead	140	140	0
19-VS-50/19-VS-55	arsenic	90	86	5
	lead	280	310	10
APC-VS-11/APC-VS-17	arsenic	21	22	5
	lead	2600	2000	26

SAMPLE ID & DUPLICATE ID	ANALYTE	PRIMARY RESULT (µg/L)	DUPLICATE RESULT (µg/L)	RPD %
5-VS-121/5-VS-116	arsenic	2100	1600	27
	lead	15	20	29
26-VS-32/26-VS-35	--	--	--	
26-VS-39/26-VS-44	arsenic	180	180	0
	lead	23	25	8
18-VS-219/18-VS-224	--	--	--	--
12-VS-2/12-VS-7	arsenic	50	59	17
	lead	58	69	17
LR181-VS-1/LR181-VS-9	arsenic	51	57	11
	lead	62	68	9
38-VS-37/38-VS-47	arsenic	75	65	14
	lead	24	23	4
38-VS-46/38-VS-48	arsenic	190	180	5
	lead	36	35	3
38-VS-74/38-VS-80	arsenic	380	560	38
	lead	46	62	30
38-VS-96/38-VS-117	arsenic	17	38	**76**
	lead	5.7	16	**95**
SA5-8944/SA5-8940	arsenic	11	12	9
	lead	14	17	19

Reporting Limits

To ensure the level of sensitivity meets project goals, reporting limits were reviewed. Reported results are acceptable.

Summary

The data reviewed are acceptable for use based on a majority of acceptable quality control data. The data generally meet criteria specified in the 1992 Hart Crowser Management Plan. The data may be used to assess analyte concentrations without qualification.

Introduction

This section presents a quality control (QC) review of data generated from collection and analysis of two soil samples from the Weyerhaeuser-Dupont site in Dupont, Washington, on February 17, 1999. Two primary samples were submitted to MultiChem Analytical Services for analysis. This review includes evaluation of the following:

- Laboratory report and reporting of required analyses
- Chain of custody and holding times
- Method blanks
- Matrix spike / blank spikes (MS / BS)
- Laboratory duplicates
- Field duplicates
- Reporting limits

The data quality review was conducted using guidance from the following documents:

- National Functional Guidelines for Organic Data Review, EPA, February 1994.
- Remedial Investigation/Feasibility Study, Former Dupont Works Site Management Plan, Hart Crowser, January 1992.

Criteria used to assess the data are found in Section 5 of the Management Plan. The analytical data has been compared to the Management Plan limits.

The samples were analyzed for the following chemicals and chemical groups.

Arsenic	EPA 6010
Lead	EPA 6010

Sample Case
The following sample data group was included in this review:

MAS#: 902024

Laboratory Report and Reporting of Required Analyses

The laboratory report was complete; all QC results were included. The project scope of work stated that URSGWC would provide industry-accepted evaluation of data quality and documentation of sample acquisition and custody. Comprehensive data validation was not

requested for this round of sampling. The reports provide all necessary information to complete this review.

All analytical methods were reported as requested.

Chain of Custody and Holding Times

Samples were maintained under chain of custody until arrival at the laboratory. Samples were preserved and cooled. Sample jars were in good condition.

The samples were extracted and analyzed within the 6 month holding time. Holding times were within specifications of the Management Plan.

Method and Field Blanks

Method blanks were used to determine if samples were contaminated through laboratory procedures or equipment. The laboratory method blanks were free of target analytes. The QC frequency requirement of one laboratory blank per analytical batch was met. No data were qualified due to these results.

Matrix Spikes / Blank Spikes

Matrix spike analyses were used to assess matrix effects with respect to the analytical data. The QC frequency requirement of one MS and one BS per analytical batch or one MS and one BS per 20 samples, was met.

The spike recoveries ranged from 93 to 99 percent and were within the control limits. No data were qualified due to these results.

Laboratory Duplicates

The laboratory relative percent difference (RPD) was 17 percent and was within the control limits. No data were qualified.

Field Duplicates

Field duplicate samples were used to assess sampling precision and representativeness. The QC frequency requirement of one field duplicate for 5 percent of the total samples, specified in the Management Plan, was not met. No data were qualified.

Reporting Limits

To ensure the level of sensitivity meets project goals, reporting limits were reviewed. All sample results were detections. Reported results are acceptable.

Summary

The data reviewed are acceptable for use based on a majority of acceptable quality control data. The data generally meet criteria specified in the 1992 Hart Crowser Management Plan. The data may be used to assess analyte concentrations without qualification.

Introduction

This section presents a quality control (QC) review of data generated from collection and analysis of soil samples from the Weyerhaeuser-Dupont site in Dupont, Washington, in November and December, 1998. Sixty-eight primary samples and three field duplicates were submitted to MultiChem Analytical Services for analysis. This review includes evaluation of the following:

- Laboratory report and reporting of required analyses
- Chain of custody and holding times
- Method blanks
- Matrix spike / blank spikes (MS / BS)
- Laboratory duplicates
- Field duplicates
- Reporting limits

The data quality review was conducted using the following documents:

- National Functional Guidelines for Organic Data Review, EPA, February 1994.
- Remedial Investigation/Feasibility Study, Former Dupont Works Site Management Plan, Hart Crowser, January 1992.

Criteria used to assess the data are found in Section 5 of the Management Plan. The analytical data has been compared to the Management Plan limits.

The samples were analyzed for the following chemicals and chemical groups.

Arsenic	EPA 6010/7060
Lead	EPA 6010/7421

Sample Case
The following sample data groups were included in this data review:

MAS#: 811052
MAS#: 812020
MAS#: 812021

Laboratory Report and Reporting of Required Analyses

The laboratory report was complete; all QC results were included. The project scope of work stated that Woodward-Clyde would provide industry-accepted evaluation of data quality and documentation of sample acquisition and custody. Comprehensive data validation was not requested for this round of sampling. The reports provide all necessary information to complete this review.

All analytical methods were reported as requested.

Chain of Custody and Holding Times

Samples were maintained under chain of custody until arrival at the laboratory. Samples were preserved and cooled until arrival at the laboratory. Sample bottles were in good condition.

The samples were extracted and analyzed within the 6 month holding time. Holding times were within specifications of the Management Plan.

Method and Field Blanks

Method blanks were used to determine if samples were contaminated through laboratory procedures or equipment. The laboratory method blanks were free of target analytes. The QC frequency requirement of one laboratory blank per analytical batch was met.

Three rinse blanks were analyzed. The field rinse blanks were free of target analytes. No data were qualified due to these results.

Matrix Spikes / Blank Spikes

Matrix spike analyses were used to assess matrix effects with respect to the analytical data. The QC frequency requirement of one MS and one BS per analytical batch or one MS and one BS per 20 samples, was met.

The matrix spike and blank spike results were compared to evaluate the accuracy of laboratory procedures. The spike recoveries ranged from 67 to 112 percent and were within the control limits with the following exception. Two of the lead MS percent recoveries were not calculated as the sample concentration was greater than four times the spike concentration. No data were qualified due to these results.

Laboratory Duplicates

The relative percent differences (RPDs) ranged from 0 to 26 percent and were within the control limits established by the laboratory. No data were qualified.

Field Duplicates

Field duplicate samples were used to assess sampling precision and representativeness. The QC frequency requirement of one field duplicate for 5 percent of the total samples, specified in the Management Plan, was met. Three sets of field duplicate samples were collected. The RPD of detected compounds were calculated for the duplicate pairs (shown below). The RPDs were acceptable.

Sample ID	Analyte	Primary (mg/kg)	Duplicate (mg/kg)	Relative Percent Difference (percent)
98SCOM0105 / COM0111	arsenic	4.9	4.4	11
	lead	4.6	5.3	14
98SCHR0302 / CHR0311	arsenic	87	82	5.9
	lead	34000	42000	21
98SCHR0407 / CHR0411	arsenic	26	30	14
	lead	190	230	19

Reporting Limits

To ensure the level of sensitivity meets project goals, reporting limits were reviewed. All sample results were detections. Reported results are acceptable.

Summary

The data reviewed are acceptable for use based on a majority of acceptable quality control data. The data generally meet criteria specified in the 1992 Management Plan. The data may be used to assess analyte concentrations in the groundwater without qualification.

Introduction

This section presents a quality control (QC) review of data generated from collection and analysis of groundwater samples from the former DuPont Works site in Dupont, Washington, on October 17, 1997. Eight primary samples and one QC sample (field duplicate) were submitted to MultiChem Analytical Services for analysis. This review includes evaluation of the following:

- Chain of custody and holding times
- Laboratory report and reporting of required analyses
- Laboratory blanks
- Rinsate (field) blanks
- Field duplicates
- Laboratory duplicates
- Matrix spike/matrix spike duplicates (MS/MSD)
- Surrogate recoveries (where applicable)
- Reporting limits

The data quality review was conducted using the following documents:

- National Functional Guidelines for Organic Data Review, EPA, February 1994.
- Remedial Investigation/Feasibility Study, Former DuPont Works Site Management Plan, Hart Crowser, January 1992.

Criteria used to assess the data are found in Section 5 of the Management Plan. The analytical data has been compared to the Management Plan limits.

The samples were analyzed for the following chemicals and chemical groups.

Explosives (NAX): SW846 8090 (modified)

Sample Case

The following samples were included in this data review:

MW-22
MW-22-D (Blind field duplicate of MW-22)
Seep-1
MW-3
MW-19
MW-6
MW-8
W-2
W-1

Chain of Custody and Holding Times

Samples were maintained under chain of custody until arrival at the laboratory. Samples were preserved and cooled.

The sample holding times were within specifications of the Management Plan.

Laboratory Report and Reporting of Required Analyses

The laboratory report was complete and all QC results were included. The project scope of work stated that Woodward-Clyde would provide industry-accepted evaluation of data quality and documentation of sample acquisition and custody.

Section 5.0 of the Management Plan gives the required QC level of effort, including QC measures such as calibration frequency. Some of these QC measures may have been met by the laboratory, but were not confirmed through data evaluation because comprehensive data validation was not requested. The reports provide all necessary information to complete this data assurance review.

All analytical methods were reported as requested.

Method Blanks

Method blanks were used to determine if samples were contaminated through laboratory procedures or equipment. The laboratory method blanks were free of contamination. The QC frequency requirement specified in the Management Plan of one laboratory blank per analytical batch was met.

Rinsate (Field) Blanks

No rinsate blanks were associated with the samples because samples were transferred directly from dedicated bailers into sample jars.

Field Duplicates

Field duplicate samples were used to assess sampling precision and representativeness. The QC frequency requirement of one field duplicate for 5 percent of the total samples, specified in the Management Plan, was met. One set of field duplicate samples was collected at MW-22 and the duplicate was identified as MW-22-D. Only two compounds were detected; all other compounds were non-detect. The relative percent difference (RPD) of detected compounds were calculated for the duplicate pair (shown below). All RPDs were acceptable.

ANALYTE	PRIMARY (µg/L)	DUPLICATE (µg/L)	RELATIVE PERCENT DIFFERENCE (percent)
2,6-dinitrotoluene	0.14	0.14	0%
2,4-dinitrotoluene	0.029	0.027	7%

Laboratory Duplicates

The laboratory analyzed matrix spike/matrix spike duplicates for the explosives method.

Matrix Spike/Matrix Spike Duplicates

Matrix spike analyses were used to assess matrix effects with respect to the analytical data. The QC frequency requirement specified in the Management Plan of one MS and one MSD per analytical batch was met.

The matrix spike and matrix spike duplicate results were compared to identify the laboratory precision. The MS/MSD RPDs were all within the control limits established by the laboratory and found in the Management Plan. No data were qualified.

All blank spike/blank spike duplicate (BS/BSD) recoveries were within the control limits. No data were qualified.

Surrogate Recoveries

Surrogate compounds were used in the analysis of organic compounds (EPA Method 8090 modified) to monitor analyte extraction efficiency/method accuracy on a per sample basis. All surrogate recoveries were within the Management Plan control limits. No data were qualified due to surrogate results.

Reporting Limits

To ensure that the level of sensitivity required for project goals was met, reporting limits were reviewed. The reporting limits requested in the Management Plan were met or exceeded.

ANALYTE	REQUESTED RL (µg/L)	ACTUAL RL (µg/L)
nitrobenzene	1.7	0.40
1,3-dinitrobenzene	0.44	0.040
2,6-dinitrotoluene	0.13	0.010
2,4-dinitrotoluene	0.13	0.020
1,3,5-trinitrobenzene	0.16	0.040
2,4,6-trinitrotoluene	2.9	0.040

Summary

The data reviewed are acceptable for use based on a majority of acceptable quality control data. The data generally meet criteria specified in the 1992 Hart Crowser Management Plan. The data may be used to assess analyte concentrations in the groundwater with the stated qualifications.

Introduction

This section presents a quality control (QC) review of data generated from collection and analysis of groundwater samples from the Weyerhaeuser-Dupont site in Dupont, Washington, on March 23, 1999. Five primary samples, and one field duplicate were submitted to MultiChem Analytical Services for analysis. This review includes evaluation of the following:

- Chain of custody and holding times
- Laboratory report and reporting of required analyses
- Laboratory blanks
- Rinsate (field) blanks
- Field duplicates
- Laboratory duplicates
- Matrix spike/matrix spike duplicates (MS/MSD)
- Blank spike review
- Surrogate recoveries
- Reporting limits

The data quality review was conducted using the following documents:

- National Functional Guidelines for Organic Data Review, EPA, February 1994.
- National Functional Guidelines for Inorganic Data Review, EPA, February 1994.
- Remedial Investigation/Feasibility Study, Former Dupont Works Site Management Plan, Hart Crowser, January 1992.

Criteria used to assess the data are found in Section 5 of the Management Plan. The analytical data has been compared to the Management Plan limits.

The samples were analyzed for the following chemicals and chemical groups.

Explosives (NAX): SW846 8091 (modified)

Sample Case

The following table includes samples associated with this data review, the laboratories sample identification number, any analytes that were qualified, and any qualifiers that were added to the laboratory data.

Sample ID	Laboratory ID	Analyte	Qualified Result
MW-3	903061-1	1,3-dinitrobenzene	0.21 J
MW-6	903061-2	1,3-dinitrobenzene	0.32 J
MW-19	903061-3	1,3-dinitrobenzene	0.39 J
MW-22	903061-4	1,3-dinitrobenzene	0.37 J
MW-29 duplicate of MW-19	903061-5	1,3-dinitrobenzene	0.4 J
W-2	903061-6	1,3-dinitrobenzene	none

Chain of Custody and Holding Times

The chain of custody forms indicate that the samples were maintained under chain of custody, the forms were signed during release and receipt, and the samples were appropriately preserved., with the following exception. The cooler temperature was 9.8 °C, outside of the recommended temperature range of 4±2 °C. No data were qualified due to chain of custody or holding time issues.

The water holding time for NAX is 7 days from collection to extraction, and 40 days from extraction to analysis. Holding times were met.

Laboratory Report and Reporting of Required Analyses

The laboratory reported all requested analyses and the laboratory report is complete. The project scope of work stated that Woodward-Clyde would provide industry-accepted evaluation of data quality and documentation of sample acquisition and custody.

Section 5 of the Management Plan gives the required QC level of effort, including QC measures such as calibration frequency. These QC measures may have been met by the laboratory, but were not confirmed through data evaluation because comprehensive data validation was not requested. The reports provide all necessary information to complete this data assurance review.

Method Blanks

Method blanks were used to determine if samples were contaminated through laboratory procedures or equipment. The laboratory method blanks were free of contamination. The QC frequency requirement specified in the Management Plan of one laboratory blank per analytical batch was met.

Rinsate (Field) Blanks

No rinsate blanks were associated with the samples.

Field Duplicates

Field duplicate samples are used to assess sampling precision and representativeness. The QC frequency requirement of one field duplicate for 5 percent of the total samples, specified in the Management Plan, was met. One set of field duplicate samples was collected at MW-19 and the duplicate was identified as MW-29. Four compounds were detected; all other compounds were non-detect. The relative percent difference (RPD) of detected compounds were calculated for the duplicate pair (shown below). All RPDs were acceptable.

Analyte	Primary (µg/L)	Duplicate (µg/L)	Relative Percent Difference (percent)
nitrobenzene	1.4	1.1	24%
2,4-dinitrotoluene	0.064	0.074	14%
1,3-dinitrobenzene	0.39	0.40	2.5%
2,4,6-trinitrotoluene	0.21	0.23	9%

Laboratory Duplicates

The laboratory analyzed matrix spike/matrix spike duplicates for the explosives method.

Matrix Spike/Matrix Spike Duplicates

Matrix spike analyses were used to assess matrix effects with respect to the analytical data. The QC frequency requirement specified in the Management Plan of one matrix spike/matrix spike duplicate (MS/MSD) per analytical batch was met.

The matrix spike/matrix spike duplicate results were compared to identify the laboratory precision. The MS/MSD percent recoveries and RPDs were all within the control limits, with the following exceptions.

- The MS/MSD percent recoveries were above the control limits for 1,2-dinitrobenzene at 183% and 192%. Associated data above the reporting limit were qualified as estimated (J).
- The RPD for 2,4,6-trinitrotoluene was above the control limit at 76%. Since both the MS and MSD percent recoveries were within the control limits, no data were qualified due to these results.

Blank Spike Review

All blank spike/blank spike duplicate (BS/BSD) recoveries were within the control limits, with the following exception. The percent recovery for 1,3-dinitrobenzene was above the control limit at 164%. Since the associated matrix spike quality control data were also above the control limits, the associated data above the reporting limit were qualified as estimated (J).

Surrogate Recoveries

Surrogate compounds are used in the analysis of organic compounds to monitor analyte extraction efficiency/method accuracy on a per sample basis. All surrogate recoveries were within the Management Plan control limits. No data were qualified due to surrogate results.

Reporting Limits

To ensure that the level of sensitivity required for project goals was met, reporting limits were reviewed. The reporting limits requested in the Management Plan were met or exceeded.

Analyte	Requested RL (µg/L)	Actual RL (µg/L)
nitrobenzene	1.7	0.40
1,3-dinitrobenzene	0.44	0.040
2,6-dinitrotoluene	--	0.010
2,4-dinitrotoluene	--	0.020
1,3,5-trinitrobenzene	0.16	0.040
2,4,6-trinitrotoluene	--	0.040

Summary

The data reviewed are acceptable for use based on a majority of acceptable quality control data. The data generally meet criteria specified in the 1992 Hart Crowser Management Plan. The data may be used to assess analyte concentrations in the groundwater with the stated qualifications.

Introduction

This section presents a quality control (QC) review of data generated from collection and analysis of groundwater samples from the Weyerhaeuser-Dupont site in Dupont, Washington, on March 28, 2000. Four primary samples and one field duplicate were submitted to MultiChem Analytical Services for analysis. This review includes evaluation of the following:

- Chain of custody and holding times
- Laboratory report and reporting of required analyses
- Laboratory blanks
- Rinsate (field) blanks
- Field duplicates
- Laboratory duplicates
- Matrix spike/matrix spike duplicates (MS/MSD)
- Blank spike review
- Surrogate recoveries
- Reporting limits

The data quality review was conducted using the following documents:

- National Functional Guidelines for Organic Data Review, EPA, February 1994.
- National Functional Guidelines for Inorganic Data Review, EPA, February 1994.
- Remedial Investigation/Feasibility Study, Former Dupont Works Site Management Plan, Hart Crowser, January 1992.

Criteria used to assess the data are found in Section 5 of the Management Plan. The analytical data has been compared to the Management Plan limits.

The samples were analyzed for the following chemicals and chemical groups.

Explosives (NAX): SW846 8091 (modified)

Sample Case

The following table includes samples associated with this data review, the laboratory sample identification number, any analytes that were qualified, and any qualifiers that were added to the laboratory data. Monitoring well MW-3 was not sampled due to an inadequate amount of sample available.

Sample ID	Laboratory ID	Analyte	Qualified Result
MW-3	not sampled		
W-2	89066-1	all NAX results	J or UJ
MW-19	89066-2	all NAX results	J or UJ
MW-29 duplicate of MW-19	89066-5	all NAX results	J or UJ
MW-22	89066-22	all NAX results	J or UJ
MW-6	89066-7	all NAX results	J or UJ

Chain of Custody and Holding Times

The chain of custody forms indicate that the samples were maintained under chain of custody, the forms were signed during release and receipt, and the samples were appropriately preserved. The samples were submitted to Multichem Analytical Services for analysis. Multichem went out of business on March 31, 2000; however, they were able to extract the samples. After confirming that Multichem was closed and would not be able to analyze the extracts, the samples and extracts were retrieved from Multichem on April 18, 2000. The samples and extracts were submitted to Sound Analytical for analysis.

The water holding time for NAX is 7 days from collection to extraction, and 40 days from extraction to analysis. Holding times were met.

Laboratory Report and Reporting of Required Analyses

The laboratory reported all requested analyses and the laboratory report is complete. The project scope of work stated that Woodward-Clyde would provide industry-accepted evaluation of data quality and documentation of sample acquisition and custody.

Section 5 of the Management Plan gives the required QC level of effort, including QC measures such as calibration frequency. These QC measures may have been met by the laboratory, but were not confirmed through data evaluation because comprehensive data validation was not requested. The reports provide all necessary information to complete this data assurance review.

Method Blanks

Method blanks were used to determine if samples were contaminated through laboratory procedures or equipment. The QC frequency requirement specified in the Management Plan of one laboratory blank per analytical batch was met. Target analytes in the method blank were below detection with the exceptions listed in the following table. Qualified data are summarized in the Sample Case section.

SAMPLE ID	ANALYTE	RESULT (µg/L)
Method Blank 89066-08	RDX	0.15
	1,3,5-Trinitrobenzene	0.083
	Tetryl	0.082
	2,4,6-Trinitrotoluene	0.084
	2-Amino-4,6-dinitrotoluene	0.12
	4-Amino-2,6-dinitrotoluene	0.074

Rinsate (Field) Blanks

No rinsate blanks were associated with the samples.

Field Duplicates

Field duplicate samples are used to assess sampling precision and representativeness. The QC frequency requirement of one field duplicate for 5 percent of the total samples, specified in the Management Plan, was met. One set of field duplicate samples was collected at MW-19 and the duplicate was identified as MW-29. One compound was detected; all other compounds were qualified as non-detect. The relative percent difference (RPD) of the detected compound was calculated for the duplicate pair (shown below). All RPDs were acceptable.

Analyte	Primary (µg/L)	Duplicate (µg/L)	Relative Percent Difference (percent)
2,6-dinitrotoluene	0.42	0.42	0

Laboratory Duplicates

The laboratory analyzed matrix spike/matrix spike duplicates for the explosives method.

Matrix Spike/Matrix Spike Duplicates

Matrix spike analyses were used to assess matrix effects with respect to the analytical data. The QC frequency requirement specified in the Management Plan of one matrix spike/matrix spike duplicate (MS/MSD) per analytical batch was met.

The matrix spike/matrix spike duplicate results were compared to identify the laboratory precision. The MS/MSD percent recoveries and RPDs were all within the control limits, with the following exceptions.

- The MSD percent recovery was above the control limits for nitrobenzene at 174%. The associated MS percent recovery was within the control limits; therefore, no data were qualified.

Blank Spike Review

All blank spike recoveries were within the control limits. No data require qualification based on blank spike percent recoveries.

Surrogate Recoveries

Surrogate compounds are used in the analysis of organic compounds to monitor analyte extraction efficiency/method accuracy on a per sample basis. Surrogate percent recoveries for all samples, except the blank spike, were outside of the control limits. All data were qualified as estimated (J).

Reporting Limits

To ensure that the level of sensitivity required for project goals was met, reporting limits were reviewed. The reporting limits requested in the Management Plan were met or exceeded.

Analyte	Requested RL (µg/L)	Actual RL (µg/L)
nitrobenzene	1.7	0.10
1,3-dinitrobenzene	0.44	0.05
2,6-dinitrotoluene	--	0.05
2,4-dinitrotoluene	--	0.05
1,3,5-trinitrobenzene	0.16	0.05
2,4,6-trinitrotoluene	--	0.05

Summary

The data reviewed are acceptable for use based on a majority of acceptable quality control data. The data meet most criteria specified in the 1992 Hart Crowser Management Plan. The data may be used to assess analyte concentrations in the groundwater without qualification.

Introduction

This section presents a quality control (QC) review of data generated from collection and analysis of groundwater samples from the Weyerhaeuser-Dupont site in Dupont, Washington, on March 28, 2001. Five primary samples and one field duplicate were submitted to Sound Analytical Services for analysis. This review includes evaluation of the following:

- Chain of custody and holding times
- Laboratory report and reporting of required analyses
- Laboratory blanks
- Field duplicates
- Laboratory duplicates
- Matrix spike/matrix spike duplicates (MS/MSD)
- Blank spike review
- Surrogate recoveries
- Reporting limits

The data quality review was conducted using the following documents:

- National Functional Guidelines for Organic Data Review, EPA, February 1994.
- Remedial Investigation/Feasibility Study, Former Dupont Works Site Management Plan, Hart Crowser, January 1992.

Criteria used to assess the data are found in Section 5 of the Management Plan. The analytical data has been compared to the Management Plan limits.

The samples were analyzed for the following chemicals and chemical groups.

Nitroamine & Nitroaromatic Compounds: SW846 8330

Sample Case

The following table includes samples associated with this data review, the laboratory sample identification number, any analytes that were qualified, and any qualifiers that were added to the laboratory data.

Sample ID	Laboratory ID	Analyte	Qualified Result
MW-44 (dup of MW-22)	97075-01	none	
MW-3	97075-02	none	
MW-6	97075-03	none	
MW-19	97075-04	none	
MW-22	97075-05	none	
W-2	97075-06	none	

Chain of Custody and Holding Times

The chain of custody forms indicate that the samples were maintained under chain of custody, the forms were signed during release and receipt, and the samples were appropriately preserved.

The water holding time for NAX is 7 days from collection to extraction, and 40 days from extraction to analysis. Holding times were met for all samples.

Laboratory Report and Reporting of Required Analyses

The laboratory reported all requested analyses and the laboratory report is complete. The project scope of work stated that URS would provide industry-accepted evaluation of data quality and documentation of sample acquisition and custody.

Section 5 of the Management Plan gives the required QC level of effort, including QC measures such as calibration frequency. These QC measures may have been met by the laboratory, but were not confirmed through data evaluation because comprehensive data validation was not requested. The reports provide all necessary information to complete this data assurance review.

Method Blanks

Method blanks were used to determine if samples were contaminated through laboratory procedures or equipment. The QC frequency requirement specified in the Management Plan of one laboratory blank per analytical batch was met. Target analytes in the method blank were below detection. No data require qualification based on method blank contamination.

Field Duplicates

Field duplicate samples are used to assess sampling precision and representativeness. The QC frequency requirement of one field duplicate for 5 percent of the total samples, specified in the Management Plan, was met. One set of field duplicate samples was collected at MW-22 and the duplicate was identified as MW-44. The primary and duplicate samples did not have any detections greater than the reporting limit. No data require qualification based on the field duplicate.

Laboratory Duplicates

The laboratory analyzed matrix spike/matrix spike duplicates for the explosives method.

Matrix Spike/Matrix Spike Duplicates

Matrix spike analyses are used to assess matrix effects with respect to the analytical data. The QC frequency requirement specified in the Management Plan of one matrix spike/matrix spike duplicate (MS/MSD) per analytical batch was not met. The laboratory did not have enough sample volume to perform an MS/MSD. The laboratory did perform a blank spike/blank spike duplicate. No data were qualified.

Blank Spike Review

All blank spike recoveries were within the control limits. No data require qualification based on blank spike percent recoveries.

Surrogate Recoveries

Surrogate compounds are used in the analysis of organic compounds to monitor analyte extraction efficiency/method accuracy on a per sample basis. Surrogate percent recoveries were within the control limits for all samples, with the following exception. The surrogate percent recovery for sample MW-19 was greater than the control limits at 158%. The associated sample results were less than the reporting limit; therefore, no data were qualified.

Reporting Limits

To ensure that the level of sensitivity required for project goals was met, reporting limits were reviewed. The reporting limits requested in the Management Plan were met or exceeded with the exception of the reporting limits for 2,4-dinitrotoluene and 2,5-dinitrotoluene. No data were qualified.

Analyte	Requested RL (µg/L)	Actual RL (µg/L)
nitrobenzene	8	0.4
1,3-dinitrobenzene	1.6	0.5

Analyte	Requested RL (µg/L)	Actual RL (µg/L)
2,6-dinitrotoluene	0.13	0.4
2,4-dinitrotoluene	0.13	0.4
1,3,5-trinitrobenzene	0.8	0.5
2,4,6-trinitrotoluene	2.9	0.4

Pre-1994 Data Quality Assessment

This appendix material was developed in draft form by Hart Crowser for the 1994 Draft RI (Hart Crowser 1994d). For completeness, it is retained here as it was developed. It includes references to all sampling conducted as specified in the RI/FS Management Plan (Hart Crowser 1992a). As a result, it refers to locations sampled outside the Consent Decree Boundary that will be the subject of additional reports.

DATA QUALITY ASSESSMENT

This appendix describes the assessment of data quality of the chemical analyses performed for the remedial investigation (RI) as outlined in the RI/FS Management Plan (Hart Crowser, 1992), including the pre-RI, RI, and interim source removal data. Much of the previous investigation data quality work conducted on the Site is summarized in the data quality sections of the pre-RI reports (Hart Crowser, 1986 and 1987, respectively). If data quality review was not conducted on pre-RI data, we reviewed the data as part of this project, and any data quality considerations are addressed in this appendix. A data quality review was conducted in order to evaluate data usability to determine the distribution of chemicals on the Site in the RI and to evaluate risk to human health and the environment (EPA, 1990).

The data validation and data quality review reports as of April 1994 are for results of approximately 4,800 soil samples, 28 freshwater sediment samples, 11 marine sediment samples, 16 Bunker C samples, 70 surface water samples, and 335 groundwater samples as summarized in this appendix.

This data quality assessment appendix contains the following sections:

- Section F.1 — Summary of analytical methods used for chemical analysis of samples collected for the RI as specified in the Management Plan;
- Section F.2 — Evaluation of Site data for explosives method performance;
- Section F.3 — Summary of specific data quality results; and
- Section F.4 — Evaluation of overall precision, accuracy, representativeness, completeness, and comparability, and RI sample handling, holding times, and reporting limits. The detailed data validation reports are contained in supplemental reports in Hart Crowser's Weyerhaeuser/DuPont Project File.

Table F-1 summarizes the total number of critical data points and the extent of data qualification. Table F-2 presents a list of critical data that have been qualified based on our validation efforts and includes reasons for the qualification. Critical data include sample results that were greater than or within twenty percent of the MTCA screening level as specified in Section 1-1 of the RI. This list was analyzed to identify trends in quality control parameters that may impact specific data sets and overall data quality. Critical data were evaluated in order to assess the level of uncertainty in the data used to define chemical distribution for the RI, evaluate FS cleanup options, and quantify risk. No trends impacting overall critical data quality were identified; therefore, there is a high level of confidence associated with the data.

Analytical Methods

Sampling and analysis of soil, sediment, surface water, and groundwater from the Site used analytical methods and data quality objectives specified in the Quality Assurance Project Plan (QAPP; Section 5.0 of Hart Crowser, 1992a). Analytical methods were based on SW-846 protocols or other Ecology-approved methods in accordance with WAC 173-340-830(4)(a) (see page 5-5 of the Management Plan). Ecology approved the analytical methods for explosives analyses and lead (see Attachment 5-8 of the Management Plan). Appropriate methods were selected to achieve sufficient reporting limits to evaluate results against MTCA screening levels.

Chemical analyses were performed by Analytical Technologies, Incorporated (ATI). Explosives analyses were performed at the ATI Fort Collins laboratory. The other chemical analyses were performed at ATI in Renton, Washington, or San Diego, California. Samples for a given chemical analysis method were performed by the same ATI regional laboratory except for metals. Most soil samples were analyzed for metals by the ATI Renton laboratory. A limited number of soil samples were analyzed for metals at the ATI San Diego laboratory (see discussion in Section F.4.5 on comparability).

In addition, a limited number of soil samples were analyzed by the Hart Crowser *FAST* Laboratory for lead and TPH. These data received a limited review, which is also discussed in this appendix.

Evaluation of Explosives Method Performance

Analysis methods were developed by Hart Crowser and ATI for nitroaromatic explosives, MMAN, and nitroglycerin in order to achieve reporting limits low enough to meet MTCA screening levels. Method performance was evaluated in order to determine if reporting limits were achievable. Results of ATI's Method Detection Limit (MDL) study for nitroaromatic explosives were compared with reporting limits and MTCA screening levels for groundwater and surface water. The MDL study was performed according to EPA guidance (40 CFR 136B). Reporting limits are less than MTCA screening levels; however, in some cases dilution was required prior to analysis and as a result, sample detection limits for selected samples were elevated above the screening levels.

Reporting limits and MTCA screening levels were also compared to ATI instrument calibration ranges. For all analytes, the reporting limit is comparable to the lowest level calibration standard, indicating that accurate quantitation can be achieved at this concentration.

Summary of Specific Data Quality Results

In general, overall data quality for this project was very good. Table F-1 summarizes by matrix the total number of critical data points, the number of estimated (J) and rejected (R) critical data points, and the percent of the critical data not requiring qualification. The percent of critical data not requiring qualification was in most cases greater than 90 percent. This indicates that overall data quality was high and meets data usability requirements as defined by EPA (1990). The limited amount of qualification of critical data indicates that the data are highly reliable for use in the RI/RA/FS.

In two cases, data review resulted in the rejection of data based on EPA guidance (EPA, 1988a and 1988b) (or on professional judgment). Two data sets were identified that were rejected or not used: organophosphate pesticides (OP Pesticides) in freshwater sediments and PAHs in marine sediments.

Freshwater Sediment OP Pesticides. OP pesticide results were rejected for all freshwater sediments analyzed by EPA Method 8140 for several reasons. Initial and continuing calibration was outside of established control limits, surrogate recoveries were high, ranging from 164 to 501 percent (outside the control limits of 50 to 150 percent), and matrix spike recovery was high (outside the control limit of 120 percent). Because of the cumulative effect of multiple qualifiers, all sample results were qualified as rejected (R) based on EPA guidance.

Marine Sediment PAHs. PAH results were not used for all marine sediment samples analyzed by EPA Method 8310 because of data quality issues and the availability of a more reliable data set. PAH results from the semivolatiles analyses (EPA Method 8270) for these samples were used instead. PAHs were determined by two analytical methods in order to meet sediment management standards for all compounds. Method 8310 may be able to achieve lower detection limits than Method 8270 for some PAH compounds; however, the 8310 results may be less qualitatively reliable due to matrix interferences and associated compound resolution problems, and lack of confirmation of compound identities. The 8270 method is a confirmation method and thus more qualitatively reliable; however, detection limits may be higher for some compounds than can be achieved by Method 8310.

Results from the 8310 analyses indicated there were interferences that resulted in poor matrix spike recovery, and the duplicate precision was not as good as those from the 8270 analysis. Method 8270 was also able to achieve sufficiently low sample detection limits for all compounds to evaluate results against sediment management standards, therefore only the PAH results from the Method 8270 analysis for marine sediments were used.

Data Quality Review Results

In general, the data quality objectives of the project as specified in the QAPP were met with the exception of the rejected data. The analytical data, as qualified, are deemed acceptable for use in this RI/RA/FS. All laboratory data were subjected to one of two levels of quality

assurance review as described below by either Hart Crowser, or EcoChem, Inc., of Seattle, Washington. The detailed data validation reports and original laboratory data are available in Hart Crowser's project files. The following discussion summarizes the findings detailed in the data validation reports.

To confirm the usability of the data for the RI/RA/FS, approximately twenty percent of all soil data produced by ATI received full validation in accordance with EPA's Laboratory Data Validation Functional Guidelines for Evaluating Organics Analysis (EPA, 1988a) and with Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis (EPA, 1988b), including evaluation of raw data sample chromatograms and initial and continuing calibration verifications. In addition, all Round 1 and Round 8 groundwater, surface water, and freshwater and marine sediments received full validation.

The remaining soil and water chemical data used in the risk assessment and any field screening data were reviewed with regard to the following, as appropriate to the particular analysis:

- Holding times;
- Blanks;
- Detection limits;
- Duplicates;
- MS/MSDs;
- Surrogate recoveries;
- Completeness;
- Comparability; and
- Reporting limits.

Chemical analyses of quality control samples such as method blanks, MS/MSD, and laboratory duplicates were performed as specified in the applicable analytical protocols and in the QAPP. Field duplicates were collected to evaluate field and laboratory precision with respect to sample homogeneity, collection, handling, shipping, storage, preparation, and analysis.

Assessment of overall data quality was based upon quantitative (precision, accuracy, completeness) and qualitative (representativeness, comparability) quality assurance objectives. Definitions of these parameters and the applicable quality control procedures are given below in Sections F.4.1 through F.4.5.

Precision

Precision measures the reproducibility of measurements under a specific set of conditions. It is a quantitative measure of the variability of a group of measurements compared to their average values. Analytical precision is measured through matrix spike/matrix spike duplicate (MS/MSD) samples for organics analyses and through laboratory duplicate samples for inorganic analyses. Analytical precision is quantitatively expressed as the relative percent difference (RPD) between the MS/MSD or duplicates. Analytical precision measurements

were carried out on site matrices at a minimum frequency of one per laboratory analysis group or one in 20 samples, whichever was more frequent, per matrix analyzed.

The RPD is calculated as follows:

$$RPD = \frac{(C_1 - C_2) \times 100\%}{(C_1 + C_2)/2}$$

Where:
C_1 = Larger of the two observed values
C_2 = Smaller of the two observed values

MS/MSD and laboratory duplicate precision generally met data quality performance criteria and were deemed acceptable. A number of metals including cadmium, chromium, lead, mercury, and nickel, and PAH data were qualified based on poor laboratory duplicate precision (see Table
F-2). The poor PAH precision values were caused by sample dilution that was required due to high concentrations and/or matrix interference. The poor metals precision may be due to the heterogeneous sample matrix.

Field duplicates were used to assess both laboratory and field precision. Field duplicate precision is discussed in Section F.4.4.

Accuracy

Accuracy measures the closeness of the measured value to the true value. The accuracy of chemical test results is assessed by "spiking" samples with known standards (surrogates or matrix spike) and establishing the percent recovery (%R). Accuracy measurements on matrix spike samples were carried out at a minimum frequency of one in 20 samples per matrix analyzed for both organic and inorganic analyses. Surrogate recoveries were determined for every sample analyzed for organics in accordance with SW-846 requirements for organic analysis.

Percent recovery is calculated as follows:

$$\%R = 100\% \times (S-U)/C_{SA}$$

Where:
S = Measured concentration in spiked aliquot
U = Measured concentration in unspiked aliquot
C_{SA} = Actual concentration of spike added

In general, the data accuracy is adequate for the purposes of this RI/RA/FS. Several sample matrix spike and/or surrogate recoveries of organics analyses were outside of control limits and the data were qualified accordingly (see Table F-2). Samples were qualified as rejected (R) when either matrix or analytical spikes were not recovered in a number of metals

analysis, including cadmium and antimony, and one nitroglycerin and one sample analyzed for nitroaromatic explosives.

Surrogate recoveries were often out of control limits when sample dilution was required. This occurred primarily with explosives and PAH data.

Completeness

Completeness is defined as the percentage of measurements made which are judged to be valid measurements. Results will be considered valid if all the precision, accuracy, and representativeness objectives are met. The target completeness goal for this RI/RA/FS is 90 percent as defined in the QAPP.

Measurement of completeness (C) is based on overall usefulness of the data and is defined as the ratio of acceptable measurements obtained to the total number of planned measurements for an activity.

$$C = \frac{\text{Total No. of data within target QC limits}}{\text{Total No. of data points}} \times 100$$

Total number of data within target QC limits is calculated by subtracting the total number of rejected (R) data points from the total number of data points. (Note that each analyte counts as one point.)

A total of approximately 64,300 data points were generated as part of the sampling and analysis program outlined in the Management Plan and conducted during the RI.

Overall completeness of the data is 99.5 percent. A number of specific data points were rejected for various quality control reasons. Table F-2 outlines the reasons for rejecting specific data points.

Representativeness

Representativeness is a measure of how closely the measured results reflect the actual concentration or distribution of the chemical compounds in the matrix sampled. The sampling plan design, sampling techniques, and sample handling protocols (e.g., storage, preservation, and transportation) were designed to assure representative samples with respect to the site. Representativeness is evaluated based on the collection and analysis of field duplicates, rinseate blanks, trip blanks, and laboratory method blanks.

- Field duplicates were used to assess field and method variation.

- Rinseate blanks were used as a quality control check on the effectiveness of sampling equipment decontamination procedures and possible contamination carry over during collection of the samples.

- Trip blanks were used to assess the potential contamination of water samples by volatile organic compounds during sample handling, storage, and transport to the laboratory.

- Laboratory method blanks were used to assess laboratory contamination during the performance of the method.

Additionally, elevated dissolved antimony concentrations were found to be derived from filters from the manufacturer and were therefore not representative of Site conditions (see the discussion below and in Section 3.2.3 of the RI).

Field Duplicates. Field duplicates and blind field duplicates were used to assess field and analysis method variation and were obtained at a minimum frequency of 1 per 20 samples, except groundwater field duplicates, which were collected at a frequency of 1 per 28 samples. Blind field duplicates were submitted to the laboratory without identifying them as field duplicates.

Field duplicate precision was evaluated by calculating the relative percent difference (RPD) between the reported results for a sample and its duplicate. Field duplicate precision data quality performance criteria have not been established by EPA (EPA, 1988a and 1988b). A screening level of 50 percent was used to evaluate detected sample results. Non-detected results cannot be reliably evaluated for precision.

Since duplicate analyses measure both field and laboratory precision, results may be quite variable. Poor precision can be a reflection of the difficulties associated with collecting identical field samples and sample heterogeneity. Poor precision can also be attributed to low levels detected near the detection limit as observed with the explosives and PAH analyses. Precision was generally acceptable at higher concentrations of these analyte groups.

The overall precision of the field duplicate analysis was acceptable. For all matrices and analytes combined, 80% of the RPDs calculated were below 50 percent. In addition to field duplicates, approximately 40 blind duplicates were submitted for analysis during the last round of surface soil sampling for arsenic. Blind duplicates were submitted to evaluate potential bias in precision of the non-blind field duplicate samples. No field duplicate bias was found. The average RPD of the field duplicates and blind duplicates were essentially equal, at 20 and 21 percent, respectively.

No data were qualified based on field duplicate or blind duplicate precision.

Rinseate Blanks. Potential contamination of groundwater samples in the field is assessed through analysis of rinseate blanks. Rinseate blanks are collected from the final rinse with de-ionized water of decontaminated sampling equipment. Rinseate blanks contained low concentrations (less than screening levels) of one or more of the following target analytes:

- Total aluminum, cadmium, antimony, copper, chromium, selenium, and zinc were detected in one of five rinseate blank samples;
- Dissolved antimony (detected in four of five samples) and zinc (detected in one of five

samples);

- 2,4,6-TNT and 2,4-DNT were detected in one of five samples;
- PCBs were detected in three of five samples;
- PAHs were detected in four of five samples;
- TOC was detected in four of five samples; and
- TDS was detected in one of five samples.

Detections may be attributed to poor decontamination techniques. However, all detections were less than screening levels and therefore cross-contamination from sampling equipment did not impact reported sample results.

For samples associated with a blank containing a detectable concentration of a target analyte, action was taken by comparing sample detects to 5X (10X for common organic laboratory contaminants) the level detected in the blank (action level). If the sample result was less than the action level, the result was qualified as not detected (U) with an elevated reporting limit.

Trip Blanks. Trip blanks, consisting of organic-free distilled, de-ionized water in sealed VOA bottles, were carried into the field during groundwater sampling operations. Two trip blanks were stored and shipped to ATI with each round of groundwater samples and analyzed for volatile organics to assess outside sources of contamination. Two trip blanks had detectable concentrations of chloroform, a common laboratory contaminant. The chloroform contamination may be due to residual solvent from the laboratory bottle decontamination process.

Laboratory Blanks. Laboratory method blanks were analyzed by the laboratory at a minimum of 5 percent frequency to assess laboratory contamination. Several laboratory method and instrument blanks associated with both soil and water analyses contained analytes at concentrations at or above the reporting limit. Common laboratory contaminants were methylene chloride, acetone, hexane, di-n-butylphthalate, bis(2-ethylhexyl) phthalate, and di-n-octylphthalate.

Dissolved Antimony Related to Sample Filtration. Filters used in the collection of filtered groundwater and surface water samples for dissolved metals analyses contributed antimony to the filtered samples. Antimony was detected consistently in filtered groundwater and surface water samples from the Site, but not in unfiltered samples. This is contrary to the typical situation, where total metals concentrations were substantially higher than dissolved concentrations due to sample turbidity. Strong evidence, including independent data from the manufacturer, exists that the filters contributed antimony to the filtered water samples, and that antimony is not present at detectable concentrations in Site groundwater or surface water. Section 3.2.3 in Volume 1 provides additional details.

Comparability

Comparability is a qualitative parameter expressing the confidence of one data set compared with another. The use of standard techniques for both sample collection and laboratory analysis should make data collected comparable to data generated by different laboratories or by the same laboratory at different times. Comparability can be judged by evaluating the consistency in sampling and analysis methods used, and the differences between results produced by different laboratories.

Field Sampling. Throughout field activities, field sampling procedures were followed as outlined in the RI/FS Management Plan (Hart Crowser, 1992). Field audits were conducted during soil and groundwater sampling activities during the RI to evaluate adherence to sampling protocols. Three audits were conducted during soil sampling events on November 18, 1993, December 10, 1993, and January 7,1994. One audit was conducted during groundwater sampling on January 4, 1993.

Due to the non-homogeneous nature of the soil matrix, it is essential that consistent sampling methods are used to collect representative samples. We noted during our field audits that surface soil samples were consistently collected from 0- to 6-inch depths. Care was taken to collect approximately equal amounts from the entire soil horizon and to mix the sample well prior to placing in the sample jar. We found that the sampling methods were consistent between sampling events and field teams.

Groundwater sampling consistency is maintained by routinely purging three casing volumes of water from each well prior to sampling, monitoring pH, temperature, and conductivity during well purging, and using dedicated bailers to avoid cross contamination. Purging the well and collecting only fresh water from the aquifer assures samples are representative of aquifer conditions.

Based on the results of these audits, samples were collected according to protocols outlined in the RI/FS Management Plan and therefore results for soil and groundwater are considered representative of site conditions.

Ecology Split Data Evaluation. Fifty-two field duplicate samples were collected and submitted to ATI and Manchester for analysis for arsenic in soil. ATI and Manchester prepared the samples according to ATI's SOP which was approved by Ecology as part of the Sampling and Analysis Plan in the Management Plan (Hart Crowser, 1992). RPDs ranged from 0.71 to 49 percent, typical values for the preparation and analysis of soil samples. Four of 52 RPD values were greater than 35 percent, EPA's precision criteria for evaluating soil laboratory duplicates (EPA, 1988b). No EPA or state criteria have been established for evaluating field duplicate precision.
Results for field duplicates analyzed by ATI were confirmed by Manchester, therefore, arsenic results reported by ATI for this project are considered to be representative of conditions on the Site.

Analysis Methods. SW-846 or EPA-approved methods (see page 5-5 and Attachment 5-8 of the Management Plan) were used during all sampling for all parameters. Although our analyses of explosives compounds by GC/ECD, MMAN by GC/FPD, and nitroglycerin by HPLC did not employ a standard SW-846 method, Standard Operating Procedures (SOPs) were used by ATI which produced internally comparable results. All RI data collected for this work were comparable because samples of a given matrix that were analyzed by a specific analytical method were consistently sent to the same ATI laboratory with only one exception.

A small number of soil samples were analyzed in the ATI San Diego laboratory for total metals. SW-846 methods were employed as by the ATI Renton laboratory with only one exception. Matrix spikes from the graphite furnace analyses in Renton were not analytically spiked like the samples analyzed at ATI San Diego. Matrix spike percent recoveries were therefore evaluated based on sample and matrix spike results which were derived from the same calculations and do not account for analytical spike corrections. Because SW-846 methods were followed by both laboratories, data produced by the San Diego laboratory are considered comparable to that produced by the Renton laboratory.

Total lead in soil was also analyzed by the Hart Crowser *FAST* Laboratory using an Ecology-approved method (see Attachment 5-8 of the Management Plan). The *FAST* Laboratory digestion method is different than the
SW-846 method. The Hart Crowser mobile laboratory used a microwave digestion technique for determination of total lead by atomic absorption. At the start of this project microwave digestion was not an SW-846 method; however, an approval letter from Ecology for use of Hart Crowser lead analyses as an approved method in accordance with WAC 173-340-830(4)(a)(vii) was included as Attachment 5-8 in the QAPP. Evaluation of the correlation between the *FAST* Laboratory and SW-846 methods indicate comparable results. A total of 16 samples were analyzed by both Hart Crowser's *FAST* Lab and ATI. A regression analysis of the data resulted in a correlation coefficient (r^2) of 0.91. The *FAST* Lab screening results show excellent comparability when compared to ATI's SW-846 method for the analysis of lead.

Sample Handling. Sample handling involved the collection of samples and the transportation of intact samples from field to laboratory. This pathway was monitored through field notes, custody forms, and data tracking sheets completed by Hart Crowser personnel. Samples were collected and handled following appropriate procedures to obtain representative samples (40 CFR Part 136, 1985 and EPA, 1986) (see Section 5-6 of the Management Plan). Appropriate containers and preservatives were used to maintain sample integrity. Samples were received by ATI within 24 hours of collection. Samples were received in good condition with the accompanying chain of custody documentation.

Holding Times. Holding time requirements for compounds are stated in Table 5-2 of the Management Plan (Hart Crowser, 1992). Holding times were calculated according to the date of sample collection. In general, all samples were extracted and analyzed within the recommended holding times. However, a number of PAH and mercury data were qualified as estimated (J) due to extraction or analysis beyond the recommended holding times (see

Table F-2).

Reporting Limits. Required reporting limits were established to meet the MTCA screening levels listed in Table 1-1 of the RI. For most analyses, reporting limits were less than or equal to MTCA screening levels. Reporting limits for non-detected results, which were above screening levels, were elevated due to dilution and were primarily associated with nitroaromatic explosives analyses for soil samples, chlorinated benzene in the marine sediment samples, and indeno(1,2,3-c,d)pyrene in the groundwater samples.

Most elevated nitroaromatic reporting limits were due to dilution of soil samples for quantitation of high positive levels of one or more analyte(s). Chlorinated benzene reporting limits were elevated due to high sample moisture content. The screening level for indeno(1,2,3-c,d)pyrene is between the MDL and reporting limit. ATI identifies compounds that are detected below the reporting limit and qualifies them as estimated because they are below the quantitation limit; however, since none of the sample results were qualified for this reason, it is unlikely that indeno
(1,2,3-c,d)pyrene was present in the samples at concentrations above the screening level. Additionally, semivolatile results were qualified as estimated mainly because target compounds were detected below the reporting limit.

Table F-1 – Qualified Critical Data Results (Greater Than or Within 20% of MTCA Screening Level) Sheet 1 of 2

	Chemistry Group	Compound Name	Total Data Points	Number of Samples		Percentage of Unqualified Data
				Qualified J	Qualified R	
Groundwater						
	Explosive	2,4-Dinitrotoluene	253	2		99.21
	Explosive	2,6-Dinitrotoluene	253	7		97.23
	Explosive	Total DNTs (Not U)	100	8		92.00
	Metal (Diss)	Antimony	163	16	1	89.57
	Metal (Diss)	Arsenic	142	5		96.48
	Metal (Diss)	Lead	247	3		98.79
	Metal (Diss)	Thallium	142	16		88.73
	Metal (Total)	Aluminum	141	19		86.52
	Metal (Total)	Antimony	156	55	1	64.10
	Metal (Total)	Arsenic	142	32		77.46
	Metal (Total)	Lead	155	6		96.13
	Metal (Total)	Nickel	142	1		99.30
	Metal (Total)	Thallium	141	5		96.45
	PAH (Carc)	Benzo(a)Anthracene	142	6		95.77
	PAH (Carc)	Benzo(a)Pyrene	142	6		95.77
	PAH (Carc)	Benzo(b)Fluoranthene	142	6		95.77
	PAH (Carc)	Benzo(k)Fluoranthene	142	6		95.77
	PAH (Carc)	Chrysene	142	7		95.07
	PAH (Carc)	Dibenzo(a,h)Anthracene	142	6		95.77
	PAH (Carc)	Indeno(1,2,3-c,d)Pyrene	142	6		95.77
	Semivolatile	Bis(2-Ethylhexyl)Phthalate	42	3		92.86
	TPH-418	TPH (418.1)	139	17		87.77
Soil						
	Explosive	2,4,6-Trinitrotoluene	919	5		99.46
	Explosive	2,4-Dinitrotoluene	1250	51		95.92
	Explosive	2,6-Dinitrotoluene	1250	57		95.44
	Explosive	Total DNTs (Not U)	318	67		78.93
	Metal (TCLP)	TCLP Lead	67	9		86.57
	Metal (Total)	Antimony	233	2		99.14
	Metal (Total)	Arsenic	1953	142		92.73
	Metal (Total)	Lead	2728	39	1	98.53
	Metal (Total)	Mercury	864	12		98.61
	PAH (Carc)	Benzo(a)Anthracene	228	23		89.91
	PAH (Carc)	Benzo(a)Pyrene	228	25		89.04
	PAH (Carc)	Benzo(b)Fluoranthene	228	26		88.60
	PAH (Carc)	Benzo(k)Fluoranthene	228	20		91.23
	PAH (Carc)	Chrysene	228	27		88.16
	PAH (Carc)	Dibenzo(a,h)Anthracene	228	18		92.11
	PAH (Carc)	Indeno(1,2,3-c,d)Pyrene	228	23		89.91
	PAH (Carc)	Total CPAHs (1/2 U)	227	14		93.83
	PAH (Carc)	Total CPAHs (Not U)	128	2		98.44
	Semivolatile	Benzo(a)Anthracene	149	3		97.99
	Semivolatile	Benzo(a)Pyrene	149	2		98.66
	Semivolatile	Benzo(b)Fluoranthene	149	1		99.33
	Semivolatile	Chrysene	149	4		97.32
	Semivolatile	Total CPAHs (1/2 U)	149	10		93.29
	TPH-418	TPH (418.1)	697	13		98.13

Table F-1 – Qualified Critical Data Results (Greater Than or Within 20% of MTCA Screening Level) Sheet 2 of 2

Chemistry Group	Compound Name	Total Data Points	Number of Samples		Percentage of Unqualified Data
			Qualified J	Qualified R	
Surface Water					
Metal (Diss)	Cadmium	29	2		93.10
Metal (Diss)	Lead	44	2		95.45
Metal (Total)	Arsenic	29	5		82.76
Metal (Total)	Selenium	29	1		96.55
Metal (Total)	Thallium	29	7		75.86
OCPesticide	Aldrin	3	3		0.00
OCPesticide	Endrin	3	1		66.67
PAH (Carc)	Benzo(k)Fluoranthene	29	2		93.10
Semivolatile	Bis(2-Ethylhexyl)Phthalate	8	1		87.50
Marine Sediment					
Explosive	2,4-Dinitrotoluene	11	2		81.82
Explosive	2,6-Dinitrotoluene	11	3		72.73
PAH (Non-Carc)	Phenanthrene	11	1		90.91
Semivolatile	Acenaphthene	11	1		90.91
Semivolatile	Benzo(g,h,i)Perylene	11	1		90.91
Semivolatile	Dibenzo(a,h)Anthracene	11	1		90.91
Semivolatile	Fluoranthene	11	2		81.82

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Table F-2 - Qualified Critical Data Results Greater Than or Within 20 Percent of the Screening Level

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
Groundwater						
Explosives in µg/L						
2,4-Dinitrotoluene	9210-102-2	MW-19F-10-92	0.32	J	0.13	Low surrogate recovery (22%)
2,4-Dinitrotoluene	9008389-08	MW-3-8-90	0.14	J	0.13	Low surrogate recovery, 46% and Matrix spide %R above control
2,6-Dinitrotoluene	9210-102-2	MW-19F-10-92	0.25	J	0.13	Low surrogate recovery (22%)
2,6-Dinitrotoluene	9203-138-1	MW-19-3-92	0.23	J	0.13	1) 1-C-3NB surrogate %R = 43% (50-150%) 2) 1,5-DNN surrogate %R = 34% (50-150%)
2,6-Dinitrotoluene	9008389-07	MW-19-8-90	0.32	J	0.13	Low surrogate recovery, 46% and MS %R above control
2,6-Dinitrotoluene	9008389-08	MW-3-8-90	0.18	J	0.13	Low sample and blank surrogate recovery
2,6-Dinitrotoluene	9008389-06	MW-6-8-90	0.23	J	0.13	Low sample and blank surrogate recovery
2,6-Dinitrotoluene	9008378-02	MW-8-8-90	0.14	J	0.13	Low sample and blank surrogate recovery
2,6-Dinitrotoluene	9211-192-1	NP-7007 (5D)	0.13	J	0.13	Low sample and blank surrogate recovery
Dissolved Metals in mg/L						
Antimony	9207-218-1	7-B-503	0.69	R	0.006	MS %R = 13% (62-152%)
Antimony	9203-158-6	MW-1-3-92	0.0055	J	0.006	Laboratory control sample %R = 48% (62-152%)
Antimony	9203-158-7	MW-11-3-92	0.0067	J	0.006	Laboratory control sample %R = 48% (62-152%)
Antimony	9203-158-8	MW-17-3-92	0.0084	J	0.006	Laboratory control sample %R = 48% (62-152%)
Antimony	9203-158-10	MW-20-3-92	0.0072	J	0.006	Laboratory control sample %R = 48% (62-152%)
Antimony	9203-158-13	MW-22-3-92	0.0069	J	0.006	Laboratory control sample %R = 48% (62-152%)
Antimony	9203-158-14	MW-27-3-92	0.013	J	0.006	Laboratory control sample %R = 48% (62-152%)
Antimony	9203-158-9	MW-6-3-92	0.0065	J	0.006	Laboratory control sample %R = 48% (62-152%)
Antimony	9203-158-5	SPR-3-3-92	0.0058	J	0.006	Laboratory control sample %R = 48% (62-152%)
Antimony	9203-158-1	83-93-3-92	0.0054	J	0.006	MS = 68-69% below QC Limit of 71%
Antimony	9203-158-2	83-94-3-92	0.007	J	0.006	MS = 68-69% below QC Limit of 71%
Total Metals in mg/L						
Aluminum	9206-207-4	MW-16-6-92	3.7	J	0.2	MS %R = 129% (75-125%)
Aluminum	9209-228-6	MW-17-9-92	19	J	0.2	MS %R = 400% (75-125%)
Aluminum	9206-207-3	MW-18-6-92	1.4	J	0.2	MS %R = 129% (75-125%)
Aluminum	9206-207-7	MW-19-6-92	1.1	J	0.2	MS %R = 129% (75-125%)
Aluminum	9209-228-14	MW-20-9-92	97	J	0.2	MS %R = 400% (75-125%)
Aluminum	9206-207-8	MW-22-6-92	36	J	0.2	MS %R = 129% (75-125%)
Aluminum	9206-207-5	MW-23-6-92	7.8	J	0.2	MS %R = 129% (75-125%)
Aluminum	9209-228-8	MW-23-9-92	50	J	0.2	MS %R = 400% (75-125%)

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
Aluminum	9209-228-7	MW-24-9-92	42	J	0.2	MS %R = 400% (75-125%)
Aluminum	9209-228-11	MW-4-9-92	7.1	J	0.2	MS %R = 400% (75-125%)
Aluminum	9209-228-12	MW-5-9-92	0.76	J	0.2	MS %R = 400% (75-125%)
Aluminum	9209-228-13	MW-6-9-92	0.27	J	0.2	MS %R = 400% (75-125%)
Aluminum	9209-228-1	MW-7-9-92	57	J	0.2	MS %R = 400% (75-125%)
Aluminum	9206-207-1	MW-8-6-92	2.2	J	0.2	MS %R = 129% (75-125%)
Aluminum	9209-228-2	MW-8-9-92	13	J	0.2	MS %R = 400% (75-125%)
Aluminum	9206-207-2	MW-8D-6-92	2.2	J	0.2	MS %R = 129% (75-125%)
Aluminum	9209-228-3	MW-8D-9-92	14	J	0.2	MS %R = 400% (75-125%)
Aluminum	9206-207-6	MW-9-6-92	2.8	J	0.2	MS %R = 129% (75-125%)
Aluminum	9209-228-4	MW-9-9-92	54	J	0.2	MS %R = 400% (75-125%)
Antimony	9207-218-1	7-B-503	0.61	R	0.006	MS %R = 13% (62-152%)
Antimony	9212-037-6	MW-22-12-92	0.005	J	0.006	Dissolved antimony is greater than total
Arsenic	9207-218-1	7-B-503	0.097	J	0.005	1) Laboratory Duplicate RPD = 160% (≤20%) 2) Matrix spike %R = 986% (71-131%)
Arsenic	9209-260-1	MW-11-9-92	0.0057	J	0.005	MS %R = 42% (71-131%)
Arsenic	9209-260-3	MW-13-9-92	0.017	J	0.005	MS %R = 42% (71-131%)
Arsenic	9209-260-4	MW-14-9-92	0.01	J	0.005	MS %R = 42% (71-131%)
Arsenic	9203-158-10	MW-20-3-92	0.0149	J	0.005	1) MS %R outside limits (68%) (71-131%) 2) Analytical spike %R outside limits (85-115%)
Arsenic	9203-158-11	MW-21-3-92	0.0125	J	0.005	MS %R outside limits (68%) (71-131%)
Arsenic	9203-138-8	MW-24-3-92	0.0143	J	0.005	Analytical spike %R outside limits
Arsenic	9209-260-7	MW-25-9-92	0.013	J	0.005	MS %R = 42% (71-131%)
Arsenic	9209-260-8	MW-26-9-92	0.012	J	0.005	MS %R = 42% (71-131%)
Arsenic	9203-158-1	83-93-3-92	0.0132	J	0.005	MS = 64+24% below QC limit of 62% Average 49%
Arsenic	9203-158-2	83-94-3-92	0.0207	J	0.005	MS = 64+24% below QC limit of 62% Average 49%
Lead	9207-218-1	7-B-503	0.233	J	0.015	Laboratory duplicate RPD = 188% (≤20%)
Lead	9203-158-11	MW-21-3-92	0.026	J	0.015	Analytical spike %R outside limits (85-115%)
Lead	9203-158-14	MW-27-3-92	0.027	J	0.015	Analytical spike %R outside limits (85-115%)
Lead	9201-190-10	36-SS-04	4100	J	250	Analytical duplicate RPD high (42%).
Lead	9201-190-8	36-TP-1-S-2	3100	J	250	Analytical duplicate RPD high (42%).
Nickel	9207-218-1	7-B-503	0.5	J	0.1	MS %R = 69% (73-121%)

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
PAHs (Carc) in µg/L						
Chrysene	9209-228-1	MW-7-9-92	0.01	J	0.012	MS %R = 111 and 117% (18-93%)
Semivolatiles in µg/L						
Bis(2-Ethylhexyl)Phthalate	9206-207-4	MW-16-6-92	7.9	J	6.3	Detected below quantification limit
Bis(2-Ethylhexyl)Phthalate	9209-228-4	MW-9-9-92	34	J	6.3	Detected below quantification limit
Bis(2-Ethylhexyl)Phthalate	9212-027-4	SPR-4-12-92	5.9	J	6.3	Detected below quantification limit
Soil						
Explosives in mg/kg						
2,4,6-Trinitrotoluene	9205-110-6	18-TP-511-S-1	75	J	33	Calibration criteria not met
2,4,6-Trinitrotoluene	9205-110-7	18-TP-511-S-1D	66	J	33	Calibration criteria not met
2,4,6-Trinitrotoluene	9307-121-1	40-VS-SC-142	160	J	33	Surrogate Recoveries Low (8% and 11%);
2,4-Dinitrotoluene	3553-219	11-TP-5,S-1	0.08	J	0.013	Detected below quantification limit
2,4-Dinitrotoluene	3553-220	11-TP-5,S-2	0.07	J	0.013	Detected below quantification limit
2,4-Dinitrotoluene	3553-222	11-TP-6,S-2	0.09	J	0.013	Detected below quantification limit
2,4-Dinitrotoluene	9211-070-8	18-B-502-S-5B	110	J	0.013	Extracted beyond 14-day holding time (13 days)
2,4-Dinitrotoluene	9304-124-1	18-CS-AW-1-10	0.017	J	0.013	Detected below quantification limit
2,4-Dinitrotoluene	9304-124-4	18-CS-AW-31-40	0.024	J	0.013	Detected below quantification limit
2,4-Dinitrotoluene	18-SS-606	18-SS-606	0.06	J	0.013	Detected below quantification limit
2,4-Dinitrotoluene	9211-138-2	18-SS-715	0.046	J	0.013	1-C-3-NB (surrogate) %R = 46% (50-150%)
2,4-Dinitrotoluene	9205-016-1	18-TP-502-S-1	0.65	J	0.013	1) Extracted beyond 14-day holding time (20 days) 2) Calibration criteria not met
2,4-Dinitrotoluene	9205-016-4	18-TP-503-S-1	0.12	J	0.013	1) Extracted beyond 14-day holding time (20 days) 2) Calibration criteria not met
2,4-Dinitrotoluene	9205-110-1	18-TP-510-S-1	0.16	J	0.013	Calibration criteria not met
2,4-Dinitrotoluene	9205-110-2	18-TP-510-S-1D	0.087	J	0.013	Calibration criteria not met
2,4-Dinitrotoluene	9205-110-3	18-TP-510-S-2	0.013	J	0.013	Calibration criteria not met
2,4-Dinitrotoluene	9205-110-6	18-TP-511-S-1	6900	J	0.013	Calibration criteria not met
2,4-Dinitrotoluene	9205-110-7	18-TP-511-S-1D	7300	J	0.013	Calibration criteria not met
2,4-Dinitrotoluene	9205-110-8	18-TP-511-S-2	23	J	0.013	Calibration criteria not met
2,4-Dinitrotoluene	9205-110-10	18-TP-511-S-3	48	J	0.013	Calibration criteria not met
2,4-Dinitrotoluene	9205-110-11	18-TP-512-S-2	0.21	J	0.013	Calibration criteria not met
2,4-Dinitrotoluene	9205-110-12	18-TP-512-S-3	0.048	J	0.013	Calibration criteria not met
2,4-Dinitrotoluene	9205-110-15	18-TP-515-S-2	1	J	0.013	Calibration criteria not met

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
2,4-Dinitrotoluene	9205-086-4	18-TP-519-S-3	0.15	J	0.013	IC3NB %R = 48%, 1,5DNN %R = 18% 950-150%)
2,4-Dinitrotoluene	9205-016-8	18-TP-547-S-1D	0.077	J	0.013	1) Extracted beyond 14-day holding time (20 days) 2) Calibration criteria not met
2,4-Dinitrotoluene	9205-016-12	18-TP-549-S-1	0.026	J	0.013	1) Extracted beyond 14-day holding time (20 days) 2) Calibration criteria not met
2,4-Dinitrotoluene	18-VS-12ADU	18-VS-12ADUP	0.04	J	0.013	Detected below quantification limit
2,4-Dinitrotoluene	9310-081-2	18-VS-176	0.035	J	0.013	Concentration was not confirmed quantitatively
2,4-Dinitrotoluene	9304-108-12	18-VS-31	0.13	J	0.013	Detected below quantification limit .
2,4-Dinitrotoluene	18-VS-5A	18-VS-5A	0.04	J	0.013	Detected below quantification limit
2,4-Dinitrotoluene	3553-185	31-TP-8,S-1	0.064	J	0.013	Detected below quantification limit
2,4-Dinitrotoluene	9307-121-1	40-VS-SC-142	0.089	J	0.013	Surrogate Recoveries Low (8% and 11%);
2,4-Dinitrotoluene	9204-054-1	DRUM-VS-1	0.51	J	0.013	Calibration criteria not met
2,4-Dinitrotoluene	9204-054-2	DRUM-VS-2	1.7	J	0.013	Calibration criteria not met
2,4-Dinitrotoluene	9204-054-3	DRUM-VS-3	0.33	J	0.013	Calibration criteria not met
2,6-Dinitrotoluene	9211-070-8	18-B-502-S-5B	86	J	0.013	Extracted beyond 14-day holding time (13 days)
2,6-Dinitrotoluene	9304-124-1	18-CS-AW-1-10	0.021	J	0.013	Detected below quantification limit
2,6-Dinitrotoluene	9210-258-5	18-SS-604	0.13	J	0.013	Calibration criteria not met (value is less than QL)
2,6-Dinitrotoluene	9210-258-6	18-SS-605	40	J	0.013	Calibration criteria not met (value is less than QL)
2,6-Dinitrotoluene	9210-258-7	18-SS-605DUP	80	J	0.013	1) Calibration criteria not met (value is less than QL)
2,6-Dinitrotoluene	18-SS-606	18-SS-606	0.03	J	0.013	Detected below quantification limit
2,6-Dinitrotoluene	9211-006-6	18-SS-632	0.028	J	0.013	Calibration criteria not met (value is less than QL)
2,6-Dinitrotoluene	9211-006-13	18-SS-652	0.084	J	0.013	2,6-DNT MS %R = 33%, 41% (50-15-%)
2,6-Dinitrotoluene	9211-138-1	18-SS-714	0.047	J	0.013	Calibration criteria not met (value is less than QL)
2,6-Dinitrotoluene	9211-138-2	18-SS-715	0.023	J	0.013	1) Calibration criteria not met (value is less than QL) 2) 1-C-3-NB (surrogate) %R = 83% (50-15-%)
2,6-Dinitrotoluene	9211-138-3	18-SS-716	0.011	J	0.013	Calibration criteria not met (value is less than QL)
2,6-Dinitrotoluene	9211-138-5	18-SS-720	0.012	J	0.013	1) Calibration criteria not met (value is less than QL) 2) Matrix spike (2,4-DNT) %R = 153% (50-150%)
2,6-Dinitrotoluene	3553-217	18-TP-23,S-1	0.07	J	0.013	Detected below quantification limit
2,6-Dinitrotoluene	9205-016-1	18-TP-502-S-1	0.49	J	0.013	1) Extracted beyond 14-day holding time (20 days) 2) Calibration criteria not met
2,6-Dinitrotoluene	9205-016-4	18-TP-503-S-1	0.16	J	0.013	1) Extracted beyond 14-day holding time (20 days) 2) Calibration criteria not met

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
2,6-Dinitrotoluene	9205-110-6	18-TP-511-S-1	7900	J	0.013	Calibration criteria not met
2,6-Dinitrotoluene	9205-110-7	18-TP-511-S-1D	9200	J	0.013	Calibration criteria not met
2,6-Dinitrotoluene	9205-110-8	18-TP-511-S-2	13	J	0.013	Calibration criteria not met
2,6-Dinitrotoluene	9205-110-10	18-TP-511-S-3	16	J	0.013	Calibration criteria not met
2,6-Dinitrotoluene	9205-110-11	18-TP-512-S-2	0.028	J	0.013	Calibration criteria not met
2,6-Dinitrotoluene	9205-110-12	18-TP-512-S-3	0.013	J	0.013	Calibration criteria not met
2,6-Dinitrotoluene	9205-086-4	18-TP-519-S-3	0.14	J	0.013	IC3NB %R = 48%, 15DNN %R = 18% (50-150%)
2,6-Dinitrotoluene	9205-016-8	18-TP-547-S-1D	0.1	J	0.013	1) Extracted beyond 14-day holding time (20 days) 2) Calibration criteria not met
2,6-Dinitrotoluene	9304-108-12	18-VS-31	0.089	J	0.013	Detected below quantification limit .
2,6-Dinitrotoluene	9304-109-9	18-VS-55	0.028	J	0.013	Detected below quantification limit .
2,6-Dinitrotoluene	9304-109-10	18-VS-56	0.07	J	0.013	Detected below quantification limit .
2,6-Dinitrotoluene	18-VS-5A	18-VS-5A	0.02	J	0.013	Detected below quantification limit
2,6-Dinitrotoluene	9211-014-14	25-TP-525-S-1	0.13	J	0.013	Calibration criteria not met (value is less than QL)
2,6-Dinitrotoluene	9211-014-16	25-TP-525-S-3	6.2	J	0.013	Calibration criteria not met (value is less than QL)
2,6-Dinitrotoluene	9307-121-1	40-VS-SC-142	0.035	J	0.013	Surrogate Recoveries Low (8% and 11%);
2,6-Dinitrotoluene	9302-196-6	5D-VS-52	0.13	J	0.013	Detected below quantification limit.
2,6-Dinitrotoluene	3553-74	5-SS-16	0.099	J	0.013	Detected below quantification limit
2,6-Dinitrotoluene	9204-054-1	DRUM-VS-1	0.44	J	0.013	Calibration criteria not met
2,6-Dinitrotoluene	9204-054-2	DRUM-VS-2	1.4	J	0.013	Calibration criteria not met
2,6-Dinitrotoluene	9204-054-3	DRUM-VS-3	0.19	J	0.013	Calibration criteria not met
TCLP Metals in mg/L						
TCLP Lead	9205-173-1	5-DH-TP-1-S-1	46.2	J	5	Laboratory duplicate RPD high (24%).
TCLP Lead	9208-160-1	5-TP-511-S-1	4.54	J	5	Laboratory duplicate RPD high (25%).
TCLP Lead	9208-160-2	5-TP-511-S-2	35.6	J	5	Laboratory duplicate RPD high (25%).
TCLP Lead	9208-160-4	5-TP-512-S-1	11.6	J	5	Laboratory duplicate RPD high (25%).
TCLP Lead	9208-160-5	5-TP-512-S-2	10.8	J	5	Laboratory duplicate RPD high (25%).
TCLP Lead	9208-160-7	5-TP-513-S-1	62.9	J	5	Laboratory duplicate RPD high (25%).
TCLP Lead	9208-160-8	5-TP-513-S-2	234	J	5	Laboratory duplicate RPD high (25%).
TCLP Lead	9208-159-1	5-TP-515-S-1	71.1	J	5	Laboratory duplicate RPD high (25%).
TCLP Lead	9208-159-2	5-TP-515-S-2	12.8	J	5	Laboratory duplicate RPD high (25%).
Total Metals in mg/kg						
Antimony	9204-119-28	40-PU-SS-502	28	J	32	Analytical spike outside control limits

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
Antimony	9204-121-5	40-PU-TP-501-S	43	J	32	Analyzed beyond 180-day holding time (217 days)
Arsenic	9311-075-15	10-SS-401	48	J	32	1) CCV recoveries were below the control limit (86.7-89.5) 2) Correlation coefficient (r) = 0.994
Arsenic	9203-084-18	16-TP-507-S-3	244	J	32	Analyzed beyond 180-day holding time (≥217 days)
Arsenic	9303-359-14	18R-05	36	J	32	High MS recovery (140%)
Arsenic	9303-359-17	18R-09	39	J	32	High MS recovery (140%)
Arsenic	9312-146-10	18R-112-S-2	42	J	32	MS recovery below 75 percent (55 %).
Arsenic	9306-310-2	18R-119	89	J	32	MS/MSD recovery high (170%)
Arsenic	9306-310-5	18R-121	130	J	32	MS/MSD recovery high (170%)
Arsenic	9306-310-8	18R-124	43	J	32	MS/MSD recovery high (170%)
Arsenic	9306-310-9	18R-125	66	J	32	MS/MSD recovery high (170%)
Arsenic	9306-310-10	18R-126	32	J	32	MS/MSD recovery high (170%)
Arsenic	9306-310-11	18R-127	66	J	32	MS/MSD recovery high (170%)
Arsenic	9303-359-9	18R-23	66	J	32	High MS recovery (140%)
Arsenic	9311-171-20	18R-461	100	J	32	Analytical spike recovery below control limits at 83.5 percent.
Arsenic	9311-181-15	18R-464E	31	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9311-181-11	18R-466	51	J	32	Analytical spike was 82.1 percent.
Arsenic	9311-181-18	18R-468	110	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9311-181-14	18R-470	27	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9311-181-1	18R-474	89	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9311-181-20	18R-474 SSE	71	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9203-249-3	19A-VS-1	92	J	32	MS %R = 129% (56-122%)
Arsenic	9208-010-4	19A-VS-3	92	J	32	MS %R = 129% (56-122%)
Arsenic	9208-010-5	19A-VS-4	230	J	32	MS %R = 129% (56-122%)
Arsenic	9310-208-5	25-SS-527	370	J	32	Analytical spike recovery low (83%)
Arsenic	9310-208-6	25-SS-528	28	J	32	Analytical spike recovery low (83%)
Arsenic	9204-249-9	25-TP-503-S-2	670	J	32	Analytical spike outside of control limits
Arsenic	9204-249-11	25-TP-504-S-1	380	J	32	Analytical spike outside of control limits
Arsenic	9311-075-13	31-SS-404	110	J	32	1) CCV recoveries below the control limit (86.7-89.5) 2) Correlation coefficient (r) = 0.994
Arsenic	9210-272-10	38-HA-502-S-1	32	J	32	Laboratory duplicate RPD = 43% (≤35%)
Arsenic	9210-272-12	38-HA-503-S-1	31	J	32	Laboratory duplicate RPD = 43% (≤35%)
Arsenic	9210-272-1	38-SS-514	475	J	32	Laboratory duplicate RPD = 43% (≤35%)

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
Arsenic	9210-272-2	38-SS-515	35	J	32	Laboratory duplicate RPD = 43% (≤35%)
Arsenic	9210-272-3	38-SS-516	58	J	32	Laboratory duplicate RPD = 43% (≤35%)
Arsenic	9210-272-4	38-SS-516 DUP	135	J	32	Laboratory duplicate RPD = 43% (≤35%)
Arsenic	9210-272-5	38-SS-517	62	J	32	Laboratory duplicate RPD = 43% (≤35%)
Arsenic	9210-272-6	38-SS-518	47	J	32	Laboratory duplicate RPD = 43% (≤35%)
Arsenic	9210-272-7	38-SS-519	59	J	32	Laboratory duplicate RPD = 43% (≤35%)
Arsenic	9210-272-8	38-SS-520	61	J	32	Laboratory duplicate RPD = 43% (≤35%)
Arsenic	9210-272-9	38-SS-521	550	J	32	Laboratory duplicate RPD = 43% (≤35%)
Arsenic	9204-157-3	39-VS-2	27	J	32	Analytical spike recovery outside control limits
Arsenic	9204-157-7	39-VS-6	29	J	32	Analytical spike recovery outside control limits
Arsenic	9211-107-6	40-BG-SS04-PL	81	J	32	MS %R = 128% (56-122)
Arsenic	9204-119-28	40-PU-SS-502	110	J	32	Analytical spike %R outside limits (85-115%)
Arsenic	9211-107-1	40-SS-03-PL	70	J	32	MS %R = 48% (56-122%)
Arsenic	9211-107-5	40-SS-149-PL	74	J	32	MS %R = 48% (56-122%)
Arsenic	9211-107-2	40-SS-30-PL	94	J	32	MS %R = 48% (56-122%)
Arsenic	9204-119-31	40-SS-506	62	J	32	Analytical spike %R outside limits (85-115%)
Arsenic	9204-119-33	40-SS-511	110	J	32	Analytical spike %R outside limits (85-115%)
Arsenic	9307-227-9	40-VS-27	100	J	32	CCV %R Outside Control Limits (89%)
Arsenic	9307-227-13	40-VS-31	68	J	32	CCV %R Outside Control Limits (89%)
Arsenic	9307-228-6	40-VS-44	44	J	32	Analytical Spike Outside Control Limits (78%)
Arsenic	9307-228-17	40-VS-54	33	J	32	CCVs %R Outside Control Limits (89% and 88%)
Arsenic	9307-230-10	40-VS-86	46	J	32	CCV %R Outside Control Limits (89%)
Arsenic	9304-121-13	5D-VS-39 DUP	46	J	32	Analytical spike recovery low (80%).
Arsenic	9302-196-1	5D-VS-43	35	J	32	Analytical spike recovery low (76%).
Arsenic	9311-153-1	APA-SS-401	45	J	32	Analytical spike recovery below control limits at 76.1 percent.
Arsenic	9311-153-3	APA-SS-401-SSE	44	J	32	Analytical spike recovery below control limits at 83.2 percent.
Arsenic	9210-270-2	APF-SS-504	76	J	32	1) CCV %R high (112%) 2) Correlation coefficient (r) = 0.992
Arsenic	9210-270-3	APF-SS-505	76	J	32	1) CCV %R high (112%) 2) Correlation coefficient (r) = 0.992
Arsenic	9210-270-5	APF-SS-507	87	J	32	1) CCV %R high (112%) 2) Correlation coefficient (r) = 0.992

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
Arsenic	9311-075-4	LR-055	55	J	32	1) CCV recoveries below the control limit (86.7-89.5) 2) (r) = 0.994.
Arsenic	9311-075-17	LR-058	64	J	32	1) CCV recoveries below the control limit (86.7-89.5) 2) (r) = 0.994.
Arsenic	9311-075-20	LR-070	62	J	32	1) CCV recoveries below the control limit (86.7-89.5) 2) (r) = 0.994.
Arsenic	9311-075-10	LR-071	34	J	32	1) CCV recoveries below the control limit (86.7-89.5) 2) (r) = 0.994.
Arsenic	9303-359-3	LR-071S	55	J	32	High MS recovery (140%)
Arsenic	9311-075-9	LR-072	42	J	32	1) CCV recoveries below the control limit (86.7-89.5) 2) (r) = 0.994.
Arsenic	9311-109-2	LR-082	42	J	32	Correlation coefficient (r)= 0.994 and the analytical spike was 81.2 percent.
Arsenic	9311-109-9	LR-083	28	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9311-109-10	LR-083 SSE	30	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9311-109-3	LR-096	68	J	32	Correlation coefficient (r)= 0.994 and the analytical spike was 83.2 percent.
Arsenic	9311-109-1	LR-098	34	J	32	Correlation coefficient (r) = 0.994 and the analytical spike was 81.5 percent.
Arsenic	9311-075-12	LR-103	40	J	32	1) CCV recoveries below the control limit (86.7-89.5) 2) (r) = 0.994.
Arsenic	9311-075-7	LR-103 SSE	42	J	32	1) CCV recoveries below the control limit (86.7-89.5) 2) (r) = 0.994.
Arsenic	9303-359-6	LR-104	690	J	32	High MS Percent Recovery (140%)
Arsenic	9312-211-11	LR-104A	100	J	32	High MS Percent Recovery (164%)
Arsenic	9311-289-15	LR-108	46	J	32	Analytical spike recovery below control limits at 82.6 percent.
Arsenic	9311-109-7	LR-113	99	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9311-109-20	LR-115	44	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9311-109-19	LR-116	130	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9312-165-20	LR-116A	57	J	32	MS Not Recovered Due to Matrix Interference
Arsenic	9311-075-8	LR-117	80	J	32	1) CCV recoveries below the control limit (86.7-89.5) 2) (r) = 0.994.
Arsenic	9312-211-12	LR-120	27	J	32	High MS Percent Recovery (164%)
Arsenic	9311-109-12	LR-131	33	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9311-109-5	LR-144	54	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9311-109-4	LR-145	30	J	32	Correlation coefficient (r)= 0.994 and the analytical spike was 83.2 percent.

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
Arsenic	9311-095-17	LR-150	51	J	32	Analytical spike recovery below control limits at 82.2 percent.
Arsenic	9311-109-14	LR-161 SSE	34	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9311-181-4	LR-233	61	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9311-181-2	LR-257	38	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9311-181-5	LR-258	58	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9311-181-7	LR-260	38	J	32	Correlation coefficient (r)= 0.994.
Arsenic	9306-310-12	LR-301	33	J	32	MS/MSD recovery high (170%)
Arsenic	9306-310-13	LR-302	29	J	32	MS/MSD recovery high (170%)
Arsenic	9306-310-15	LR-304	26	J	32	MS/MSD recovery high (170%)
Arsenic	9306-310-17	LR-306	45	J	32	MS/MSD recovery high (170%)
Arsenic	9306-310-19	LR-308	62	J	32	MS/MSD recovery high (170%)
Arsenic	9303-359-1	LR-68	170	J	32	High MS recovery (140%)
Arsenic	9303-359-8	LR-68 DUP	190	J	32	High MS recovery (140%)
Arsenic	9307-049-2	RR-517	71	J	32	Calibration coefficient (r) = 0.993
Arsenic	9307-049-3	RR-518	28	J	32	Calibration coefficient (r) = 0.993
Arsenic	9307-049-4	RR-519	31	J	32	Calibration coefficient (r) = 0.993
Arsenic	9307-049-7	RR-521	76	J	32	Calibration coefficient (r) = 0.993
Arsenic	9307-049-10	RR-524	26	J	32	Calibration coefficient (r) = 0.993
Arsenic	9307-049-13	RR-527	42	J	32	Calibration coefficient (r) = 0.993
Arsenic	9307-049-14	RR-528	400	J	32	Calibration coefficient (r) = 0.993
Arsenic	9312-146-18	RR-528-S-2	100	J	32	MS recovery below 75 percent, (55 %).
Arsenic	9312-146-19	RR-528-S-3	40	J	32	MS recovery below 75 percent, (55 %).
Arsenic	9307-049-15	RR-529	85	J	32	Calibration coefficient (r) = 0.993
Arsenic	9307-049-16	RR-530	290	J	32	Calibration coefficient (r) = 0.993
Arsenic	9307-049-17	RR-531	140	J	32	Calibration coefficient (r) = 0.993
Arsenic	9307-049-18	RR-532	92	J	32	Calibration coefficient (r) = 0.993
Arsenic	9307-049-19	RR-533	50	J	32	Calibration coefficient (r) = 0.993
Arsenic	9307-049-20	RR-534	140	J	32	Calibration coefficient (r) = 0.993
Arsenic	9312-146-8	RR-538-S-2	34	J	32	MS recovery below 75 percent, (55 %).
Arsenic	9312-146-9	RR-538-S-3	30	J	32	MS recovery below 75 percent, (55 %).
Arsenic	9307-063-1	RR-539	260	J	32	Calibration coefficient (r) = 0.993
Arsenic	9307-063-2	RR-541	580	J	32	Calibration coefficient (r) = 0.993
Arsenic	9312-165-4	RR-541-S-2	73	J	32	MS Not Recovered Due to Matrix Interference

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
Arsenic	9307-063-3	RR-542	180	J	32	Calibration coefficient (r) = 0.993
Arsenic	9312-165-6	RR-542-S-2	29	J	32	MS Not Recovered Due to Matrix Interference
Arsenic	9312-165-7	RR-542-S-3	26	J	32	MS Not Recovered Due to Matrix Interference
Arsenic	9307-063-4	RR-543	45	J	32	Calibration coefficient (r) = 0.993
Arsenic	9307-063-5	RR-544	270	J	32	Calibration coefficient (r) = 0.993
Arsenic	9307-063-6	RR-545	530	J	32	Calibration coefficient (r) = 0.993
Arsenic	9312-146-12	RR-545-S-2	33	J	32	MS recovery below 75 percent, (55 %).
Arsenic	9307-063-7	RR-546	950	J	32	Calibration coefficient (r) = 0.993
Arsenic	9312-165-8	RR-546-S-2	45	J	32	MS Not Recovered Due to Matrix Interference
Arsenic	9307-063-8	RR-547	810	J	32	Calibration coefficient (r) = 0.993
Arsenic	9307-063-9	RR-548	420	J	32	Calibration coefficient (r) = 0.993
Arsenic	9307-063-10	RR-549	410	J	32	Calibration coefficient (r) = 0.993
Arsenic	9312-165-10	RR-549-S-2	100	J	32	MS Not Recovered Due to Matrix Interference
Arsenic	9312-211-5	RR-595-S-2	150	J	32	High MS Percent Recovery (164%)
Arsenic	9312-211-6	RR-595-S-2 SSE	120	J	32	High MS Percent Recovery (164%)
Arsenic	9312-211-1	RR-596-S-2	360	J	32	High MS Percent Recovery (164%)
Arsenic	9312-211-2	RR-596-S-3	120	J	32	High MS Percent Recovery (164%)
Arsenic	9312-318-1	RR-600	70	J	32	MS recovery above 125 percent, (147 %).
Arsenic	9312-318-3	RR-602	39	J	32	MS recovery above 125 percent, (147 %).
Arsenic	9312-318-4	RR-603	160	J	32	MS recovery above 125 percent, (147 %).
Arsenic	9312-318-5	RR-604	130	J	32	MS recovery above 125 percent, (147 %).
Arsenic	9312-318-6	RR-604 SSE	170	J	32	MS recovery above 125 percent, (147 %).
Lead	9310-189-5	16-SS-508	200	J	250	MS Recovery Low (55%)
Lead	9310-189-9	16-SS-512	1100	J	250	MS Recovery Low (55%)
Lead	9310-189-10	16-SS-513	210	J	250	MS Recovery Low (55%)
Lead	9310-189-13	16-SS-516	1300	J	250	MS Recovery Low (55%)
Lead	9208-209-1	18S-VS-1	360	J	250	Laboratory duplicate RPD high (59%)
Lead	18-SS-883	18-SS-883	220	J	250	MS Recovery Low (69%)
Lead	9203-249-3	19A-VS-1	21000	J	250	Lab duplicate RPD outside control limits (54%)
Lead	9203-249-5	19B-VS-3	1100	J	250	Lab duplicate RPD outside control limits (54%)
Lead	25-VS-SC-120	25-VS-SC-120	6500	J	250	Duplicate RPD Outside Control Limits (37%).
Lead	9307-137-1	31-VS-13	29000	J	250	Lab duplicate RPD outside control limits (37%)
Lead	9307-137-2	31-VS-14	48000	J	250	Lab duplicate RPD outside control limits (37%)

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
Lead	9307-137-3	31-VS-14 DUP	56000	J	250	Lab duplicate RPD outside control limits (37%)
Lead	9307-137-4	31-VS-15	66000	J	250	Lab duplicate RPD outside control limits (37%)
Lead	9307-137-5	31-VS-16	75000	J	250	Lab duplicate RPD outside control limits (37%)
Lead	9307-137-6	31-VS-17	73000	J	250	Lab duplicate RPD outside control limits (37%)
Lead	9301-071-7	31-VS-6 DUP	220	J	250	Analytical duplicate RPD high (220%); MS recovery low (0%).
Lead	9201-190-9	36-SS-03	13000	J	250	Analytical duplicate RPD high (42%).
Lead	9201-073-1	39-B-1-S-1	7900	J	250	Analytical duplicate RPD high (42%)
Lead	420 HC*7	39-SS-09	230	J	250	No analytical Dup or MS/MSD
Lead	9201-037-8	39-SS-10	950	J	250	No analytical Dup or MS/MSD
Lead	9201-073-8	39-TP-1-S-1	930	J	250	No analytical Dup or MS/MSD
Lead	9201-073-10	39-TP-2-S-1	6200	J	250	No analytical Dup or MS/MSD
Lead	420 HC*2	39-TP-2-S-2	2052	J	250	No analytical Dup or MS/MSD
Lead	9201-073-14	39-TP-4-S-1	400	J	250	No analytical Dup or MS/MSD
Lead	9307-121-1	40-VS-SC-142	11000	J	250	MS %R <30%
Lead	9304-119-16	5D-VS-21	260	J	250	Laboratory duplicate RPD high (126%).
Lead	9304-119-20	5D-VS-25	1600	J	250	Laboratory duplicate RPD high (126%).
Lead	9304-119-3	5D-VS-6	300	J	250	Laboratory duplicate RPD high (126%).
Lead	3553-75	5-SS-17	380	AR	250	Sample result reported on an as received basis.
Lead	9302-197-15	5-VS-15	210	J	250	MS recovery above control limits (151%).
Lead	LR-68-B	LR-68-B	4700	J	250	Laboratory duplicate RPD high (51%)
Lead	9312-030-6	RR-559	3300	J	250	MS Recovery Low (57%)
Lead	9312-030-19	RR-591	1200	J	250	MS Recovery Low (57%)
Lead	9312-043-11	RR-597	720	J	250	MS Recovery Low (57%)
Mercury	9203-084-13	16-TP-505-S-1	420	J	24	Analyzed after 28-day holding time (140 days)
Mercury	9203-084-16	16-TP-507-S-1	120	J	24	Analyzed after 28-day holding time (115 days)
Mercury	9202-034-1	39-SS-02 RE	100	J	24	Exceeded holding time, LCS %r low (69%), MS %R low (57%)
Mercury	420 HC*7	39-SS-09	116.41	J	24	Analytical duplicate PRD high (76, 67%) and MS % R = (70%)
Mercury	420 HC*1	39-TP-1-S-2	40.36	J	24	Analytical duplicate PRD high (76, 67%) and MS % R = (70%)
Mercury	420 HC*2	39-TP-2-S-2	124.58	J	24	Analytical duplicate PRD high (76, 67%) and MS % R = (70%)
Mercury	9204-215-4	39-VS-12	72	J	24	Analytical duplicate RPD high (53%); MS %R high (454%)
Mercury	9204-215-2	39-VS-9	44	J	24	Analytical duplicate RPD high (53%); MS %R high (454%)
Mercury	9304-121-14	5D-VS-40	25	J	24	MS percent recoveries outside control limits (52,142%).
Mercury	9309-085-7	5D-VS-95	130	J	24	MS percent recoveries outside control limits (141%).

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
Mercury	9302-197-2	5-VS-2	22	J	24	MS percent recoveries outside control limits (190%).
Mercury	9302-197-4	5-VS-4	80	J	24	MS percent recoveries outside control limits (190%).
PAHs (Carc) in mg/kg						
Benzo(a)Anthracene	9202-189-11	16-B-502-S-1	0.79	J	0.14	Extracted beyond 14-day holding time
Benzo(a)Anthracene	9203-084-13	16-TP-505-S-1	0.5	J	0.14	Extracted beyond 14-day holding time
Benzo(a)Anthracene	9203-084-19	16-TP-508-S-1	2.3	J	0.14	Extracted beyond 14-day holding time
Benzo(a)Anthracene	9202-228-32	26-B-501-S-1	8.6	J	0.14	1) Extracted beyond 14-day holding time 2) Calibration range exceeded
Benzo(a)Anthracene	9202-228-33	26-B-501-S-1D	7.2	J	0.14	Extracted beyond 14-day holding time
Benzo(a)Anthracene	9304-119-13	5D-VS-19	8.6	J	0.14	No surrogate recovery due to dilution and RPDs out of control limits.
Benzo(a)Anthracene	9304-121-10	5D-VS-37	1.2	J	0.14	No surrogate recovery due to dilution factor of 20 and RPDs out of control.
Benzo(a)Anthracene	9304-121-20	5D-VS-46	0.84	J	0.14	No surrogate recovery due to dilution factor of 10 and RPDs out of control.
Benzo(a)Anthracene	9304-120-1	5D-VS-47	0.79	J	0.14	No surrogate recovery due to dilution factor of 20 and RPDs out of control limits.
Benzo(a)Anthracene	9304-120-2	5D-VS-48	0.15	J	0.14	Surrogate recovery (147%), MS/MSD results (None - 84%).
Benzo(a)Anthracene	9205-173-1	5-DH-TP-1-S-1	1.1	J	0.14	MS compounds not recovered.
Benzo(a)Anthracene	9203-084-60	5-HA-504-S-1	4.7	J	0.14	1) Extracted beyond 14-day holding time 2) Calibration range exceeded
Benzo(a)Anthracene	99775-151	5-SS-6	50.92	J	0.14	Detected below quantification limit
Benzo(a)Anthracene	9302-197-16	5-VS-16	0.37	J	0.14	MS/MSD RPDs (200%) and surrogate recovery (140%) above control limits.
Benzo(a)Anthracene	9302-197-2	5-VS-2	0.98	J	0.14	MS/MSD RPDs (200%) and surrogate recovery (140%) above control limits.
Benzo(a)Anthracene	9305-234-3	8-VS-SC-7-S-1	3.1	J	0.14	1) Surrogate not recovered due to dilution and MS/MSD RPD above limits (67%) 2) No MS % R
Benzo(a)Pyrene	9202-189-11	16-B-502-S-1	0.86	J	0.14	Extracted beyond 14-day holding time
Benzo(a)Pyrene	9203-084-13	16-TP-505-S-1	1.2	J	0.14	Extracted beyond 14-day holding time
Benzo(a)Pyrene	9203-084-16	16-TP-507-S-1	0.18	J	0.14	1) Extracted beyond 14-day holding time 2) Calibration range exceeded
Benzo(a)Pyrene	9203-084-19	16-TP-508-S-1	1.8	J	0.14	1) Extracted beyond 14-day holding time 2) Calibration range exceeded
Benzo(a)Pyrene	9202-228-32	26-B-501-S-1	4.8	J	0.14	1) Extracted beyond 14-day holding time 2) Calibration range exceeded
Benzo(a)Pyrene	9202-228-33	26-B-501-S-1D	5.6	J	0.14	Extracted beyond 14-day holding time
Benzo(a)Pyrene	9304-119-13	5D-VS-19	7.5	J	0.14	No surrogate recovery due to dilution and RPDs out of control limits.
Benzo(a)Pyrene	9304-121-10	5D-VS-37	1.2	J	0.14	No surrogate recovery due to dilution factor of 20 and RPDs out of control.

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
Benzo(a)Pyrene	9304-121-20	5D-VS-46	0.76	J	0.14	No surrogate recovery due to dilution factor of 10 and RPDs out of control.
Benzo(a)Pyrene	9304-120-1	5D-VS-47	1.2	J	0.14	No surrogate recovery due to dilution factor of 20 and RPDs out of control limits.
Benzo(a)Pyrene	9304-120-2	5D-VS-48	0.17	J	0.14	Surrogate recovery (147%), MS/MSD results (0 - 84%).
Benzo(a)Pyrene	9205-173-1	5-DH-TP-1-S-1	1.1	J	0.14	MS compounds not recovered.
Benzo(a)Pyrene	9205-173-7	5-DH-TP-2-S-4	7	J	0.14	No surrogate recovery information available (diluted out).
Benzo(a)Pyrene	9203-084-60	5-HA-504-S-1	4.6	J	0.14	1) Extracted beyond 14-day holding time 2) Calibration range exceeded
Benzo(a)Pyrene	9203-238-27	5-HA-512-S-2	0.73	J	0.14	Extracted beyond 14-day holding time
Benzo(a)Pyrene	99775-151	5-SS-6	43.28	J	0.14	Detected below quantification limit
Benzo(a)Pyrene	9302-197-16	5-VS-16	0.6	J	0.14	MS/MSD RPDs (200%) and surrogate recovery (140%) above control limits.
Benzo(a)Pyrene	9302-197-2	5-VS-2	1.07	J	0.14	MS/MSD RPDs (200%) and surrogate recovery (140%) above control limits.
Benzo(a)Pyrene	9306-052-12	8-VS-SC-130	0.66	J	0.14	Surrogate recovery = 200%
Benzo(b)Fluoranthene	9202-189-11	16-B-502-S-1	0.52	J	0.14	Extracted beyond 14-day holding time
Benzo(b)Fluoranthene	9203-084-13	16-TP-505-S-1	1.7	J	0.14	Extracted beyond 14-day holding time
Benzo(b)Fluoranthene	9203-084-16	16-TP-507-S-1	0.23	J	0.14	1) Extracted beyond 14-day holding time 2) Calibration range exceeded
Benzo(b)Fluoranthene	9203-084-19	16-TP-508-S-1	1.6	J	0.14	1) Extracted beyond 14-day holding time 2) Calibration range exceeded
Benzo(b)Fluoranthene	9202-228-32	26-B-501-S-1	7	J	0.14	1) Extracted beyond 14-day holding time 2) Calibration range exceeded
Benzo(b)Fluoranthene	9202-228-33	26-B-501-S-1D	6.1	J	0.14	Extracted beyond 14-day holding time
Benzo(b)Fluoranthene	9202-228-42	26-B-502-S-1	0.15	J	0.14	Extracted beyond 14-day holding time
Benzo(b)Fluoranthene	9204-121-6	40-PR-HA-501-S	1.4	J	0.14	Surrogate %R = 140% (23-136%)
Benzo(b)Fluoranthene	9304-119-13	5D-VS-19	5.2	J	0.14	No surrogate recovery due to dilution and RPDs out of control limits.
Benzo(b)Fluoranthene	9304-121-10	5D-VS-37	1.6	J	0.14	No surrogate recovery due to dilution factor of 20 and RPDs out of control.
Benzo(b)Fluoranthene	9304-121-20	5D-VS-46	1.4	J	0.14	No surrogate recovery due to dilution factor of 10 and RPDs out of control.
Benzo(b)Fluoranthene	9304-120-1	5D-VS-47	1.7	J	0.14	No surrogate recovery due to dilution factor of 20 and RPDs out of control limits.
Benzo(b)Fluoranthene	9304-120-2	5D-VS-48	0.32	J	0.14	Surrogate recovery (147%), MS/MSD results (None - 84%).
Benzo(b)Fluoranthene	9205-173-1	5-DH-TP-1-S-1	0.91	J	0.14	MS compounds not recovered.
Benzo(b)Fluoranthene	9203-084-60	5-HA-504-S-1	3	J	0.14	1) Extracted beyond 14-day holding time 2) Calibration range exceeded
Benzo(b)Fluoranthene	9302-197-16	5-VS-16	1.76	J	0.14	MS/MSD RPDs (200%) and surrogate recovery (140%) above control limits.
Benzo(b)Fluoranthene	9302-197-2	5-VS-2	0.73	J	0.14	MS/MSD RPDs (200%) and surrogate recovery (140%) above control limits.

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
Benzo(b)Fluoranthene	9206-031-5	8-TP-8-S-1	1.3	J	0.14	No surrogate recovery information available (diluted out).
Benzo(b)Fluoranthene	9306-064-1	8-VS-SC-178	0.35	J	0.14	Surrogate recovery high - maybe high bias.
Benzo(b)Fluoranthene	9305-234-3	8-VS-SC-7-S-1	0.46	J	0.14	1) Surrogate not recovered due to dilution and MS/MSD RPD above limits (67%) 2) No MS %R
Benzo(k)Fluoranthene	9202-189-11	16-B-502-S-1	0.23	J	0.14	Extracted beyond 14-day holding time
Benzo(k)Fluoranthene	9203-084-13	16-TP-505-S-1	0.68	J	0.14	Extracted beyond 14-day holding time
Benzo(k)Fluoranthene	9203-084-19	16-TP-508-S-1	1	J	0.14	Extracted beyond 14-day holding time
Benzo(k)Fluoranthene	9202-228-32	26-B-501-S-1	2.3	J	0.14	1) Extracted beyond 14-day holding time 2) Calibration range exceeded
Benzo(k)Fluoranthene	9202-228-33	26-B-501-S-1D	2.6	J	0.14	Extracted beyond 14-day holding time
Benzo(k)Fluoranthene	9304-121-20	5D-VS-46	0.45	J	0.14	No surrogate recovery due to dilution factor of 10 and RPDs out of control.
Benzo(k)Fluoranthene	9304-120-1	5D-VS-47	0.45	J	0.14	No surrogate recovery due to dilution factor of 20 and RPDs out of control limits.
Benzo(k)Fluoranthene	9205-173-1	5-DH-TP-1-S-1	0.45	J	0.14	MS compounds not recovered.
Benzo(k)Fluoranthene	9203-084-60	5-HA-504-S-1	1.7	J	0.14	1) Extracted beyond 14-day holding time 2) Calibration range exceeded
Benzo(k)Fluoranthene	9203-238-27	5-HA-512-S-2	0.72	J	0.14	Extracted beyond 14-day holding time
Benzo(k)Fluoranthene	9302-197-16	5-VS-16	0.61	J	0.14	MS/MSD RPDs (200%) and surrogate recovery (140%) above control limits.
Benzo(k)Fluoranthene	9302-197-2	5-VS-2	0.27	J	0.14	MS/MSD RPDs (200%) and surrogate recovery (140%) above control limits.
Chrysene	9202-189-11	16-B-502-S-1	0.86	J	0.14	Extracted beyond 14-day holding time
Chrysene	9203-084-13	16-TP-505-S-1	0.68	J	0.14	Extracted beyond 14-day holding time
Chrysene	9203-084-16	16-TP-507-S-1	0.14	J	0.14	Extracted beyond 14-day holding time
Chrysene	9203-084-19	16-TP-508-S-1	3.4	J	0.14	1) Extracted beyond 14-day holding time 2) Calibration range exceeded
Chrysene	9202-228-32	26-B-501-S-1	14	J	0.14	1) Extracted beyond 14-day holding time 2) Calibration range exceeded
Chrysene	9202-228-33	26-B-501-S-1D	11	J	0.14	Extracted beyond 14-day holding time
Chrysene	9202-228-42	26-B-502-S-1	0.14	J	0.14	Extracted beyond 14-day holding time
Chrysene	9204-121-6	40-PR-HA-501-S	9	J	0.14	Surrogate %R = 140% (23-136%)
Chrysene	9304-119-13	5D-VS-19	6	J	0.14	No surrogate recovery due to dilution and RPDs out of control limits.
Chrysene	9304-121-20	5D-VS-46	1.3	J	0.14	No surrogate recovery due to dilution factor of 10 and RPDs out of control.
Chrysene	9304-120-2	5D-VS-48	0.2	J	0.14	Surrogate recovery (147%), MS/MSD results (0 - 84%).
Chrysene	9205-173-1	5-DH-TP-1-S-1	1.3	J	0.14	MS compounds not recovered.

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
Chrysene	9203-084-60	5-HA-504-S-1	5.7	J	0.14	1) Extracted beyond 14-day holding time 2) Calibration range exceeded
Chrysene	99775-149	5-SS-4	59.9	J	0.14	Detected below quantification limit
Chrysene	99775-151	5-SS-6	87.84	J	0.14	Detected below quantification limit
Chrysene	9302-197-2	5-VS-2	1.44	J	0.14	MS/MSD RPDs (200%) and surrogate recovery (140%) above control limits.
Chrysene	9305-234-3	8-VS-SC-7-S-1	5.2	J	0.14	1) Surrogate not recovered due to dilution and MS/MSD RPD above limits (67%) 2) No MS % R
Chrysene	9305-234-4	8-VS-SC-7-S-2	4.2	J	0.14	Surrogate recovery above limits. RPD outside.
Dibenzo(a,h)Anthracene	9202-189-11	16-B-502-S-1	0.54	J	0.14	Extracted beyond 14-day holding time
Dibenzo(a,h)Anthracene	9203-084-19	16-TP-508-S-1	0.52	J	0.14	Extracted beyond 14-day holding time
Dibenzo(a,h)Anthracene	9205-173-1	5-DH-TP-1-S-1	0.62	J	0.14	MS compounds not recovered.
Dibenzo(a,h)Anthracene	9203-084-60	5-HA-504-S-1	2	J	0.14	Extracted beyond 14-day holding time
Indeno(1,2,3-c,d)Pyrene	9202-189-11	16-B-502-S-1	0.82	J	0.14	Extracted beyond 14-day holding time
Indeno(1,2,3-c,d)Pyrene	9203-084-19	16-TP-508-S-1	1.4	J	0.14	Extracted beyond 14-day holding time
Indeno(1,2,3-c,d)Pyrene	9203-219-7	26-SS-502	0.24	J	0.14	Extracted beyond 14-day holding time
Indeno(1,2,3-c,d)Pyrene	9304-121-20	5D-VS-46	0.57	J	0.14	No surrogate recovery due to dilution factor of 10 and RPDs out of control.
Indeno(1,2,3-c,d)Pyrene	9304-120-2	5D-VS-48	0.19	J	0.14	Surrogate recovery (147%), MS/MSD results (0 - 84%).
Indeno(1,2,3-c,d)Pyrene	9205-173-1	5-DH-TP-1-S-1	0.44	J	0.14	MS compounds not recovered.
Indeno(1,2,3-c,d)Pyrene	9203-084-60	5-HA-504-S-1	3.6	J	0.14	Extracted beyond 14-day holding time
Indeno(1,2,3-c,d)Pyrene	9203-238-25	5-HA-512-S-1	4.6	J	0.14	Extracted beyond 14-day holding time
Indeno(1,2,3-c,d)Pyrene	9203-238-26	5-HA-512-S-1D	4.6	J	0.14	Extracted beyond 14-day holding time
Indeno(1,2,3-c,d)Pyrene	9203-238-27	5-HA-512-S-2	0.33	J	0.14	Extracted beyond 14-day holding time
Indeno(1,2,3-c,d)Pyrene	9302-197-16	5-VS-16	0.93	J	0.14	MS/MSD RPDs (200%) and surrogate recovery (140%) above control limits.
Indeno(1,2,3-c,d)Pyrene	9302-197-2	5-VS-2	0.71	J	0.14	MS/MSD RPDs (200%) and surrogate recovery (140%) above control limits.
Indeno(1,2,3-c,d)Pyrene	9305-234-4	8-VS-SC-7-S-2	0.57	J	0.14	Surrogate recovery above limits and MS/MSD RPD out
Indeno(1,2,3-c,d)Pyrene	9201-246-1	S-5	1.6	J	0.14	No surrogate
Indeno(1,2,3-c,d)Pyrene	9201-246-2	S-7	3.1	J	0.14	No surrogate
Semivolatiles in mg/kg						
Benzo(a)Anthracene	9209-314-7	5D-TPS-12-S-2	2	J	1	Detected below quantification limit
Benzo(a)Anthracene	99775-151	5-SS-6	50.92	J	1	Detected below quantification limit
Benzo(a)Pyrene	9209-314-7	5D-TPS-12-S-2	2.3	J	1	Detected below quantification limit
Benzo(a)Pyrene	99775-151	5-SS-6	43.28	J	1	Detected below quantification limit
Chrysene	9209-314-7	5D-TPS-12-S-2	7.4	J	1	Detected below quantification limit

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
Chrysene	99775-149	5-SS-4	59.9	J	1	Detected below quantification limit
Chrysene	99775-151	5-SS-6	87.84	J	1	Detected below quantification limit
Chrysene	9206-031-2	8-TP-6-S-2	1.1	J	1	Detected below quantification limit
Total Petroleum Hydrocarbons (418.1) in mg/kg						
TPH-418	9207-140-1	16-B-501-S-1	1600	J	200	MS/MSD %R = 68%/18% (82-130%)
TPH-418	9202-189-11	16-B-502-S-1	2000	J	200	Blank spike %R = 132% (82-130%)
TPH-418	9202-209-2	16-B-504-S-1D	240	J	200	Blank spike %R = 154% (82-130%)
TPH-418	9202-228-32	26-B-501-S-1	2000	J	200	1) Blank spike %R = 140% (82-130%) 2) MS/MSD %R outside of limits (82-130%)
TPH-418	9202-228-33	26-B-501-S-1D	1700	J	200	1) Blank spike %R = 140% (82-130%) 2) MS/MSD %R outside of limits (82-130%)
TPH-418	9202-228-42	26-B-502-S-1	2200	J	200	1) Blank spike %R = 14% (82-130%) 2) MS/MSD %R outside of limits (82-130%)
TPH-418	9202-209-35	31-TP-508-S-2	200	J	200	1) Blank spike %R = 134-153% (82-130%) 2) MS/MSD %R outside of limits (82-130%)
TPH-418	9202-209-15	5-TP-505-S-1	190	J	200	1) Blank spike %R = 134-153% (82-130%) 2) MS/MSD %R outside of limits (82-130%)
TPH-418	9202-228-11	7-B-502-S-2	240	J	200	Blank spike %R = 140% (82-130%)
TPH-418	9306-234-1	8-VS-41	160	J	200	Laboratory duplicate RPD = 62%
TPH-418	9306-234-2	8-VS-42	210	J	200	Laboratory duplicate RPD = 62%
TPH-418	9306-234-3	8-VS-43	4000	J	200	Laboratory duplicate RPD = 62%
TPH-418	9305-234-7	8-VS-SC-11-S-1	1200	J	200	1) Analyzed past holding time MS/MSD RPD (42-80%) 2) MS/MSD %R outside of limits (82-130%)
Surface Water						
OCPesticides in µg/L						
Aldrin	99775-220	SW#2,SW#2	0.002	J	0.0001	Detected below quantification limit
Aldrin	99775-218	SW#3,SW#3	0.002	J	0.0001	Detected below quantification limit
Aldrin	99775-219	SW#4,SW#4	0.003	J	0.0001	Detected below quantification limit
Endrin	99775-219	SW#4,SW#4	0.004	J	0.0023	Detected below quantification limit
Semivolatiles in µg/L						
Bis(2-Ethylhexyl)Phthalate	9203-118-2	SW-2-3-92	3	J	3.6	Detected below quantification limit

	Lab-ID	Sample-ID	Conc.	Q	Screening Level	Reason for Qualification
Marine Sediments						
Explosives in µg/kg						
2,6-Dinitrotoluene	B142F	SDM-5	24	NJ	12.6	1) Continuing calibration criteria not met for surrogate 1,5-DNN 2) 1,5-DNN surrogate not recovered due to matrix interference
2,6-Dinitrotoluene	B142G	SDM-6	19	NJ	12.6	1) Continuing calibration criteria not met for surrogate 1,5-DNN 2) 1,5-DNN surrogate not recovered due to matrix interference
2,6-Dinitrotoluene	B142H	SDM-7	25	NJ	12.6	1) Continuing calibration criteria not met for surrogate 1,5-DNN 2) 1,5-DNN surrogate not recovered due to matrix interference
PAHs (Non-Carc) in µg/kg						
Phenanthrene	B142I	SDM-8	220	J	100	MS/MSD not recovered
Semivolatiles in µg/kg						
Acenaphthene	B142F	SDM-5	14	J	16	Detected below reporting limit
Benzo(g,h,i)Perylene	B142I	SDM-8	100	J	31	Calibration criteria not met
Dibenzo(a,h)Anthracene	B142I	SDM-8	34	J	12	Calibration criteria not met
Fluoranthene	B142F	SDM-5	390	J	160	Calibration criteria not met (28.4%D)
Fluoranthene	B142G	SDM-6	490	J	160	Calibration criteria not met (28.4%D)

Notes:

J	Estimated value
R	Rejected
NJ	Presumptive evidence of the presence of the material at an estimated quantity.
MS/MSD	Matrix Spike/Matrix Spike Duplicate
%R	Percent Recovery
%D	Percent Difference
RPD	Relative Percent Difference
CCV	Continuing Calibration Verification
QL	Quantification Limit
QC	Quality Control
Dup	Duplicate
Q	Qualifier